NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Douglas Isbell
Headquarters, Washington, DC
(Phone: 202/358-1753)

July 1, 1998

Cynthia O'Carroll
Goddard Space Flight Center, Greenbelt, MD
(Phone: 301/286-6943)

Dr. Yasunori Matogawa
Institute of Space and Astronautical Science (ISAS) of Japan
(Phone: 81-994-67-2211)

RELEASE: 98-119

NASA INSTRUMENTS ON JAPANESE PLANET-B SPACECRAFT WILL AID STUDIES OF MARTIAN UPPER ATMOSPHERE

A NASA instrument to measure the gas composition of the upper atmosphere of Mars and hardware to support a radio science experiment will fly on a Japanese spacecraft known as Planet-B. The Neutral Mass Spectrometer (NMS) instrument and Ultra Stable Oscillator are scheduled for launch aboard Planet-B on July 3, 1998, from the Kagoshima Space Center on Kyushu Island, Japan.

"The Neutral Mass Spectrometer will enable us to measure the chemical composition of the upper atmosphere of Mars on a global scale, which has never been done before," said Dr. Hasso B. Niemann, the NMS principal investigator at NASA's Goddard Space Flight Center's Laboratory for Atmospheres in Greenbelt, MD. Previous upper atmospheric composition measurements were done in only two locations as NASA's Viking landers entered the Martian atmosphere on July 20 and Sept. 3, 1976, respectively.

The radio science hardware was built by the Johns Hopkins University Applied Physics Laboratory in Laurel, MD, under contract to NASA. The ultra-precise signals generated by the oscillator serve as a very accurate clock to enable analysis of the Martian atmosphere and to help guide the spacecraft as it orbits the red planet.

Planet-B is designed to perform long-term studies of the upper Martian atmosphere and ionosphere, and its interaction with the solar wind. Launch of Planet-B is scheduled for 2:12 p.m. EDT on July 3. After launch, the Planet-B spacecraft will be placed into Earth orbit and will use two swingbys past the Moon to establish conditions for a final trajectory to Mars.

-more-

Once the spacecraft reaches Mars, which is now scheduled for Oct. 11, 1999, it will be placed into a highly elliptical or "egg-shaped" orbit stretching from 93-186 miles (150-300 kilometers) to about 17,000 miles (27,300 kilometers) above the surface. The low-altitude portion of the orbit will be used for remote sensing of the lower atmosphere and surface, and for direct measurements of upper atmosphere and ionosphere. The more distant parts of the orbit will allow instruments to probe the ions and neutral gas escaping from Mars, which interact with the charged-particle "wind" blowing outward from the Sun. Ionization of the upper atmospheric gas by solar radiation produces the charged-particle atmosphere (ionosphere) that acts as an obstacle to the solar wind.

This radiation produces species of gas not seen in Mars' lower atmosphere, such as nitric oxide, or dissociates the atmosphere into single atomic species, such as atomic oxygen. If these neutral or ionized species possess enough energy, they can escape the gravitational pull of Mars, resulting in a net atmospheric loss. Measurements of lighter species such as atomic hydrogen and deuterium also can provide clues about the evolution of the Martian atmosphere.

Mars has little or no intrinsic magnetic field to interact with this process, making it more like Venus in this respect than Earth. The upper atmosphere of Venus and its solar wind environment were studied for almost 14 years by the U. S. Pioneer Venus Orbiter spacecraft from a similar, highly elliptical orbit. The Planet-B NMS instrument is a state-of-the-art enhancement of the Pioneer Venus mass spectrometer, weighing only six pounds (2.8 kilograms). To conserve space and weight, electronic items such as transistors and integrated circuits were removed from their outer casings and placed in larger packages called hybrid circuits.

Data from previous Mars exploration spacecraft such as Mariner 9 indicate that dust storms near the surface can heat the lower atmosphere and increase the gas density in the upper atmosphere where Planet-B will make its measurements. The U.S. Mars Surveyor 1998 mission known as the Mars Climate Orbiter, due for launch this December, carries an instrument called the Pressure Modulated Infrared Radiometer, which will provide complementary information on the lower atmosphere and its response to dust storms.

The Planet-B project is managed by the Institute of Space and Astronautical Science (ISAS) within the Japanese Ministry of Education. Planet-B carries 14 instruments from Japan, Canada, Sweden, Germany and the United States. ISAS personnel will operate the spacecraft and its instruments. The spacecraft was built by the Nippon Electric Corporation and will be launched by the new M-5 rocket. This rocket is designed to expand Japan's launch capability for the inner planets and beyond.

Further information on the NASA portion of the Planet-B mission and related graphics can be obtained via the Internet at the following URL:

http://webserver.gsfc.nasa.gov/Code915/planetb.html

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Jennifer McCarter
Headquarters, Washington, DC
(Phone: 202/358-1639)

July 2, 1998

Eileen M. Hawley
Johnson Space Center, Houston, TX
(Phone: 281/483-5111)

NOTE TO EDITORS: N98-44

ASTRONAUT ANDY THOMAS TO DISCUSS MIR MISSION

Astronaut Andy Thomas, the final American to live on board the Russian Mir space station, will discuss his journey during a news conference Wednesday, July 8, beginning at 9 a.m. EDT.

Frank Culbertson, manager of the Phase 1 Shuttle/Mir program, also will participate in the briefing to discuss Thomas' tenure on Mir and review the program, which saw seven Americans live and work on board the Russian space station.

The press conference will originate from NASA's Johnson Space Center, Houston, TX, and will be broadcast on NASA Television, providing multi-center question and answer capability for reporters at participating NASA centers.

During his 130 days on board Mir, Thomas traveled more than 56 million miles. He launched as a member of the STS-89 crew on Jan. 22, 1998, becoming a Mir crew member on Jan. 24. He returned on board Discovery as a member of the STS-91 crew on June 12. When Thomas returned to Earth, he concluded 802 consecutive days of an American presence on board Mir, beginning with astronaut Shannon Lucid's arrival March 24, 1996.

The press conference can be seen on NASA Television, which is carried on GE-2, Transponder 9C, at 85 degrees West longitude, vertical polarization, frequency 3880 Mhz, audio 6.8 Mhz.

Media planning to attend the briefing at the Johnson Space Center should contact that newsroom by 5 p.m. EDT on July 6 for accreditation.

-end-

Video Advisory

National Aeronautics and
Space Administration
Washington, DC 20546
(202) 358-1600

For Release

Renee Juhans
Headquarters, Washington, DC
(Phone: 202/358-1712)

July 2, 1998

VIDEO ADVISORY: V98-73

"EARTH TODAY" - NEW EXHIBIT BEAMS DIGITAL VIEW OF OUR DYNAMIC PLANET

Today's video file provides excerpts from "Earth Today," a new multimedia exhibit opening July 2 at the National Air and Space Museum. The exhibit features ten-foot high images from a variety of Earth monitoring satellites revealing the complex interactions among the atmosphere, oceans, land masses, and life. Data for the exhibit were enhanced and rendered at NASA's Goddard Space Flight Center, Greenbelt, MD.

ITEM 1: SEA SURFACE TEMPERATURES

ITEM 1a: SEA SURFACE TEMPERATURE ANOMALIES

ITEM 1b: CLOUD COVER

ITEM 1c: WATER VAPOR

ITEM 1d: SEASONAL VEGETATION CHANGES

ITEM 1e: B-ROLL FROM SCIENCE VISUALIZATION STUDIO
For more information contact Dave Steitz at (202) 358-1730 or Wade Sisler at (301) 286-6256.

ITEM 2: REPLAY - PLANET-B

Video news file at noon, 3, 6, 9 p.m. and midnight EDT.

NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Jennifer McCarter
Headquarters, Washington DC
(Phone: 202/358-1639)

July 7, 1998

John Ira Petty
Johnson Space Center, Houston, TX
(Phone: 281/483-2530)

RELEASE: c98-h

NASA AWARDS MORE SHUTTLE WORK TO USA

NASA's Johnson Space Center, Houston, TX, has modified its contract with United Space Alliance (USA) of Houston to include more than $900 million in work on the Space Shuttle's solid rocket booster and other shuttle elements.

USA is the prime contractor for the space shuttle fleet operations. This $919.5 million cost-plus-award-fee/incentive-fee contract modification includes work previously performed under three separate NASA contracts: work on the boosters performed by USBI at Kennedy Space Center in Florida; design and production of primary shuttle avionics software by Lockheed Martin in Houston; and processing of flight crew equipment, including space suits, personal equipment and tools, performed by Boeing Aerospace Operations in Houston.

The new work comes under Phase 2 of NASA's space flight operations contract with USA. Under Phase 1 of the contract, NASA consolidated operations of 12 separate contracts under USA. Phase 2 will consolidate an additional 16 contracts as part of a continuing NASA effort to transfer day-to-day shuttle operations from government employees to private companies.

The performance period under Phase 2 runs through Sept. 30, 2002.

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Jennifer McCarter
Headquarters, Washington, DC
(Phone: 202/358-1639)

July 13, 1998

Susan Hendrix
Goddard Space Flight Center, Greenbelt, MD
(Phone: 301/286-7745)

RELEASE: 98-122

NEW NASA FACILITY WILL COMPLETE WORLDWIDE COMMUNICATIONS COVERAGE

Guam Island will be the site for a ribbon-cutting ceremony on July 15, 1998, to officially open a new terminal that will effectively complete NASA's vital communications and data-gathering support for NASA Earth-orbiting missions.

Providing global, full-time and real-time communications support for NASA's Space Network customers, including the Space Shuttle, International Space Station and Hubble Space Telescope, the new ground terminal will be capable of communicating with geosynchronous tracking and data relay satellites stationed out of view of the existing Cacique and Danzante ground stations in White Sands, NM. NASA's Goddard Space Flight Center, Greenbelt, MD, manages the overall system.

"NASA built the Guam ground station to significantly expand the quantity and quality of services we provide to all our customers," said Goddard's ground terminal project manager, Tom Gitlin. Cost of funding the Guam station will be provided by NASA's Space Network operations budget and mitigated in part by the deactivation of the Canberra station.

The Guam Remote Ground Terminal was conceived after NASA's Compton Gamma Ray Observatory suffered an onboard tape recorder failure in March 1992, and required full-time, real-time communications support. NASA established a limited capability ground terminal in Canberra, Australia, in late 1993 to provide continued support for the observatory's science mission. Goddard project officials quickly realized that an enhanced ground station was needed in the Pacific to better serve NASA's Space Network customers who traverse the Indian Ocean area.

For more information, refer to NASA's Network Control Center homepage on the Internet at: **http://ncc.gsfc.nasa.gov**

-end-

News Release

National Aeronautics and
Space Administration
Washington, DC 20546
(202) 358-1600

For Release

Donald Savage
Headquarters, Washington, DC
(Phone: 202/358-1727)

July 14, 1998

Mary Beth Murrill
Jet Propulsion Laboratory, Pasadena, CA
(Phone: 818/354-5011)

RELEASE: 98-123

NASA ESTABLISHES NEAR-EARTH OBJECT PROGRAM OFFICE AT JET PROPULSION LABORATORY

A new program office to coordinate NASA-sponsored efforts to detect, track and characterize potentially hazardous asteroids and comets that could approach Earth will be established at NASA's Jet Propulsion Laboratory (JPL), Pasadena, CA.

NASA's Near-Earth Object Program Office will focus on the goal of locating at least 90 percent of the estimated 2,000 asteroids and comets that approach the Earth and are larger than about 2/3-mile (about 1 kilometer) in diameter, by the end of the next decade.

"These are objects that are difficult to detect because of their relatively small size, but are large enough to cause global effects if one hit the Earth," said Dr. Donald K. Yeomans of JPL, who will head the new program office. "Finding a majority of this population will require the efforts of researchers at several NASA centers, at universities and at observatories across the country, and will require the participation by the international astronomy community as well."

"We determined that, in order to achieve our goals, we need a more formal focusing of our near-Earth object tracking efforts and related communications with the supporting research community," said Dr. B. Carl Pilcher, science director for Solar System Exploration in NASA's Office of Space Science, NASA Headquarters. "I want to emphasize that science research solicitations and resulting peer reviews, international coordination, and strategic planning regarding future missions will remain the responsibilities of NASA Headquarters."

In addition to managing the detection and cataloging of near-Earth objects, the new NASA office will be responsible for facilitating communications between the astronomical community and the public should any potentially hazardous objects be discovered as a result of the program, Pilcher said.

-more-

JPL was selected to host the program office because of its expertise in precisely tracking the positions and predicted paths of asteroids and comets. No significant additional staff hiring at JPL is expected at this time.

A fact sheet describing NASA's research and spacecraft missions related to asteroids and comets is available on the Internet at the following address:

http://www.hq.nasa.gov/office/pao/facts/HTML/FS-023-HQ.htm

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Brian Dunbar
Headquarters, Washington, DC
(Phone: 202/358-0873)

July 15, 1998

RELEASE: 98-124

SPACE FLIGHT, AVIATION PROGRAMS RECEIVE NASA SOFTWARE AWARD

NASA has chosen a computer program designed to remotely control Space Station experiments through the Internet and one designed to improve air traffic control as winners of the Agency's 1998 Software of the Year Award.

Lee B. Holcomb, NASA Chief Information Officer, and Dr. Daniel R. Mulville, NASA Chief Engineer and Chair of NASA's Inventions and Contributions Board, selected the winners. The award is given annually by the Inventions and Contributions Board to NASA-developed software that has significantly enhanced the Agency's performance of its mission and helped American industry maintain its world-class technology status.

One program, called Tempest, was originally developed to support the science experiments on the International Space Station. The commercial quality software is fully documented, installs simply and uses standard World Wide Web browsers to let users operate the experiments. Tempest is considered to be breakthrough and enabling technology, which has spawned new markets and will continue to do so. A study performed for NASA estimated that an extensive commercial market is likely to develop for Web-embedded remote control mechanisms, especially in the automotive, consumer electronics, office products and medical industries.

Tempest was written by Maria Babula, Lisa Lambert, Joseph Ponyik and David York of NASA's Lewis Research Center, Cleveland, OH, and Richard A. Tyo, Intel Corp.

The second winner, Center TRACON Automation System Software, is a set of three software tools for managing air traffic control systems at major airports. Designed to optimize flight operations, the software analyzes and predicts aircraft paths, creating visual representations of the flow of arriving traffic. It also provides controllers up-to-the second advisories of information to pass on to pilots that will reduce time between landings to the minimum possible.

-more-

The software has been integrated into the existing radar system at Dallas/Ft. Worth airport. Software displays in the control room supplement the manual air traffic control system. Use of the program saves an average of two minutes per flight, in turn saving money for the airlines and passengers. The Federal Aviation Administration has chosen Center TRACON for immediate implementation into all major airports and estimated its use could save airports as much as $800 million annually.

Center TRACON Automation System Software was written by Michelle Eshow and a team of 37 others at NASA's Ames Research Center, Moffett Field, CA.

NASA will grant the awards at a special ceremony at the Technology 2008 Conference to be held in Boston, MA, on Nov. 3-5, 1998. The list of winners can be found on the Internet at the URL:

http://www.hq.nasa.gov/office/codei/swy98win.html

- end -

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Donald Savage
Headquarters, Washington, DC
(Phone: 202/358-1727)

July 16, 1998

Jim Sahli
Goddard Space Flight Center, Greenbelt, MD
(Phone: 301/286-0697)

Franco Bonacina
European Space Agency Headquarters, Paris, France
(Phone: 33-1-5369-7713)

RELEASE: 98-125

EFFORTS TO RECOVER SOHO SPACECRAFT CONTINUE AS INVESTIGATION BOARD FOCUSES ON MOST LIKELY CAUSES

NASA and European Space Agency (ESA) engineers, reasoning that over the next two-to-three months the spacecraft's solar panels will increasingly face the Sun and generate power, are continuing their efforts to contact the Solar and Heliospheric Observatory (SOHO) spacecraft.

Meanwhile, the NASA/ESA investigation board concentrates its inquiry on three errors that appear to have led to the interruption of communications with SOHO on June 24. Officials remain hopeful that, based on ESA's successful recovery of the Olympus spacecraft after four weeks under similar conditions in 1991, recovery of SOHO may be possible.

The SOHO Mission Interruption Joint ESA/NASA Investigation Board has determined that the first two errors were contained in preprogrammed command sequences executed on ground system computers, while the last error was a decision to send a command to the spacecraft in response to unexpected telemetry readings. The spacecraft is controlled by a joint ESA/NASA Flight Operations Team, based at NASA's Goddard Space Flight Center, Greenbelt, MD.

The first error was in a preprogrammed command sequence that lacked a command to enable an onboard software function designed to activate a gyro needed for control in Emergency Sun Reacquisition (ESR) mode. ESR mode is entered by the spacecraft in the event of anomalies. The second error, which was in a different preprogrammed command sequence, resulted in incorrect readings from one of the spacecraft's three gyroscopes, which in turn triggered an Emergency Sun Reacquisition.

-more-

At the current stage of the investigation, the board believes that the two anomalous command sequences, in combination with a decision to send a command to SOHO to turn off a gyro in response to unexpected telemetry values, caused the spacecraft to enter a series of Emergency Sun Reacquisitions, and ultimately led to the loss of control.

The efforts of the investigation board are now directed at identifying the circumstances that led to the errors, and at developing a recovery plan should efforts to regain contact with the spacecraft succeed.

ESA and NASA engineers believe the spacecraft is currently spinning with its solar panels nearly edge-on towards the Sun, and thus not generating any power. Since the spacecraft is spinning around a fixed axis, as the spacecraft progresses in its orbit around the Sun, the orientation of the panels with respect to the Sun should gradually change. The orbit of the spacecraft and the seasonal change in the spacecraft-Sun alignment should result in the increased solar illumination of the spacecraft solar arrays over the next few months. The engineers predict that in late September 1998 illumination of the solar arrays and, consequently, power supplied to the spacecraft, should approach a maximum. The probability of successfully establishing contact reaches a maximum at this point. After this time, illumination of the solar arrays gradually diminishes as the spacecraft-Sun alignment continues to change.

In an attempt to recover SOHO as soon as possible, the Flight Operations Team is uplinking commands to the spacecraft via NASA's Deep Space Network, managed by NASA's Jet Propulsion Laboratory, Pasadena, CA, approximately 12 hours per day with no success to date. A recovery plan is under development by ESA and NASA to provide for orderly restart of the spacecraft and to mitigate risks involved.

The recovery of the Olympus spacecraft by ESA in 1991 under similar conditions leads to optimism that the SOHO spacecraft may be recoverable once contact is re-established. In May 1991, ESA's Olympus telecommunications satellite experienced a similar major anomaly which resulted in the loss of attitude, leading to intermittent power availability. As a consequence, there was inadequate communication, and the batteries and fuel froze. From analysis of the data available prior to the loss, there was confidence that the power situation would improve over the coming months.

A recovery plan was prepared, supported by laboratory tests, to assess the characteristics of thawing batteries and propellants. Telecommand access of Olympus was regained four weeks later, and batteries and propellant tanks were thawed out progressively over the next four weeks. The attitude was then fully recovered and the payload switched back on three months after the incident. Equipment damage was sustained as a result of the low temperatures, but nothing significant enough to prevent the successful resumption of the mission. The experience of Olympus is being applied, where possible, to SOHO and increases the hope of also recovering this mission.

Estimating the probability of recovery is made difficult by a number of unknown spacecraft conditions. Like Olympus, the hydrazine fuel and batteries may be frozen. Thermal stress may have damaged some of the scientific instruments as well. If the rate of spin is excessive, there may have been structural damage. SOHO engineers can reliably predict the spacecraft's orbit through November 1998. After that time, the long-term orbital behavior becomes dependent on the initial velocity conditions of the spacecraft at the time of the telemetry loss. These are not known precisely, due to spacecraft thruster activity that continued after loss of telemetry, so orbital prediction becomes very difficult.

Summing up the scientific returns from SOHO, which completed its two-year primary mission in April, Dr. George Withbroe, NASA's Director of the Sun-Earth Connections science program at NASA Headquarters said, "In the last two years, SOHO revolutionized our understanding of the Sun in many ways. It was a unique set of instruments devoted to the study of the most important star to us on Earth -- our Sun -- and we are very hopeful that the project engineers will be able to return this world-class observatory to science operations again."

More information on SOHO, including status reports, is available on the internet at:

http://sohowww.nascom.nasa.gov/

or via the new ESA science website at:

http://sci.esa.int/

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

David E. Steitz
Headquarters, Washington, DC
(Phone: 202/358-1730)

July 16, 1998

Allen Kenitzer
Goddard Space Flight Center, Greenbelt, MD
(Phone: 301/286-2806)

RELEASE: 98-126

NASA SATELLITE SHEDS NEW LIGHT ON THE LA NIÑA PHENOMENON

Research scientists using data from the recently launched Tropical Rainfall Measuring Mission (TRMM) satellite, a joint U.S/Japanese mission, are shedding new light on the phenomenon known as La Niña. TRMM research team members have successfully retrieved sea-surface temperature data from the TRMM Microwave Imager (TMI) instrument onboard the spacecraft.

This temperature data is giving scientists new insight into the complex evolution of the La Niña event -- the TMI is the only spaceborne microwave instrument observing sea-surface temperature in the tropics. The images show changes in sea-surface temperature, and ocean current movement and the dissipation of El Niño. While it is too early to draw definite conclusions, the results to date appear to confirm the onset of La Niña type conditions.

"TMI is an all-weather measuring instrument that can see through clouds," said Dr. David Adamec, oceanographer at the Goddard Space Flight Center, Greenbelt, MD. "The standard instrument (infrared radiometer), used to measure sea-surface temperature, must contend with clouds and atmospheric aerosols. Clouds block the flow of data, yet an uninterrupted consistent data stream is crucial for long-term climate study."

La Niña is essentially the opposite of the El Niño phenomenon and is characterized by unusually cold ocean temperatures in the equatorial Pacific, as compared to El Niño, where ocean temperatures are warmer than normal. La Niña and El Niño often are spoken of together and termed the El Nino/Southern Oscillations, or "ENSO." La Niña sometimes is referred to as the cold phase of the ENSO.

At the Earth's surface, La Niña effects on the world's climate tend to be opposite

-more-

those of El Niño. At higher latitudes, El Niño and La Niña are just two of several factors that influence climate. However, the impacts of El Niño and La Niña at higher latitudes are most clearly seen in winter. During a typical La Niña year, winter temperatures are warmer than normal in the Southeast and cooler in the Northwest.

Knowledge of La Niña is not as mature as that for El Niño. For example, every strong El Niño is not necessarily followed by a La Niña. Scientists at Goddard are performing advanced studies of El Niño and La Niña through information obtained from satellites in space and instruments in the oceans.

Acquiring quality sea-surface temperature data via a microwave scanner has been a long-term aspiration among oceanographers for more than a decade, when the last microwave imager ceased operations. In addition, none of the previously existing microwave scanners had the capability of the TRMM Microwave Imager. Ideally, this information will be used for the improvement of weather forecasting, anomalous weather study, and a better understanding of ocean current alteration.

Several NASA missions study the effects of El Niño and La Niña with orbiting satellites. The joint U.S.-French TOPEX/Poseidon satellite measures sea surface height; the Sea-Viewing Wide Field-of-View Sensor (SeaWiFS) measures ocean color; and TRMM measures precipitation and sea-surface temperature. The Tropical Atmosphere-Ocean Array consists of nearly 70 moored buoys in the tropical Pacific designed by the National Oceanic and Atmospheric Administration (NOAA). The devices take real-time measurements of air temperature, relative humidity, surface winds, sea surface temperatures and subsurface temperatures down to a depth of 500 meters. Data from these moored buoys is processed by NOAA and then made available to scientists.

The TRMM Microwave Imager instrument was provided by NASA. TRMM was developed jointly by NASA and NASDA and launched last November from NASDA's Tanegashima Space Center, Japan.

This La Niña research is part of NASA's Earth Science Enterprise, a long-term research program designed to study the Earth's land, oceans, air, ice and life as a total system.

Images on this research are available at URL: http://www.eorc.nasda.go.jp/TRMM

-end-

Video Advisory

National Aeronautics and
Space Administration
Washington, DC 20546
(202) 358-1600

For Release

Renee Juhans
Headquarters, Washington, DC
(Phone: 202/358-1712

July 17, 1998

VIDEO ADVISORY: V98-78

ASTROBIOLOGY: THE SEARCH FOR LIFE IN THE UNIVERSE

Today's video file provides animation and b-roll on NASA's emerging astrobiology program. Leading scientists from around the world will meet next week to discuss the development of a five-year strategic plan for astrobiology research, next-generation missions and technology requirements.

ITEM 1: ASTROBIOLOGY - LOOKING FOR LIFE IN THE UNIVERSE
Animation of molecular chain, nebula and galaxy images.
ITEM 1a: LIFE SCIENCE B-ROLL
Footage of scientists in lab, time lapse of frog embryo development and DNA strand and cell division.
ITEM 1b: INTERVIEW - DR. DAVID MORRISON, DIRECTOR OF SPACE, NASA AMES RESEARCH CENTER
ITEM 1c: INTERVIEW - SCOTT HUBBARD, INTERIM DIRECTOR, NASA ASTROBIOLOGY INSTITUTE

For more information contact Don Savage at (202)358-1727 or Kathleen Burton at (650) 604-1731.

ITEM 2: REPLAY - THE SEEDS OF LA NINA

Video news file at noon, 3, 6, 9 p.m. and midnight EDT.

NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

-end-

VideoAdvisory

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release
July 22, 1998

Renee Juhans
Headquarters, Washington, DC
(Phone: 202/358-1712)

VIDEO ADVISORY: V98-79

NASA RESEARCHERS CATCH CANNIBAL PULSAR IN THE ACT; MOLDING BETTER PRODUCTS

Today's video file provides animation and b-roll on how NASA researchers have discovered the missing link in the evolution of an exotic type of neutron star that "cannibalizes" material from a nearby companion star on its way to becoming a pulsar spinning at 400 times per second. Also on NTV is footage on how research in low-gravity helps to make metal products used in homes, automobiles and aircraft less expensive, safer and more durable.

ITEM 1: CANNIBAL PULSAR
Animation of Cannibal Pulsar.
ITEM 1a: X-ray Pulsar
Animation of X-ray pulsar.
ITEM 1b: ANIMATION of ROSSI X-RAY TIMING EXPLORER (RXTE)
ITEM 1c: INTERVIEW - TODD STROHMAYER, GODDARD SPACE FLIGHT CENTER
ITEM 1d: INTERVIEW - FRANK MARSHALL, GODDARD SPACE FLIGHT CENTER
ITEM 1e: INTERVIEW - JEAN SWANK, GODDARD SPACE FLIGHT CENTER

For more information contact Don Savage at (202) 358-1727 or Bill Steigerwald at (301) 286-5017.

ITEM 2: MOLDING BETTER PRODUCTS
Animation of Metals experiment, b-roll of metals casting, research applications and Auburn University.
ITEM 2a: INTERVIEW - DR. TONY OVERFELT, AUBURN UNIVERSITY

For more information contact Don Nolan-Proxmire at (202) 358-1983 or Steve Roy at (256) 544-6535.

Video news file at noon, 3, 6, 9 p.m. and midnight EDT.

NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Jennifer McCarter
Headquarters, Washington, DC
(Phone: 202/358-1639)

July 22, 1998

Eileen M. Hawley
Johnson Space Center, Houston, TX
(Phone: 281/483-5111)

RELEASE: 98-127

ASTRONAUT WILCUTT REPLACES HALSELL IN STAR CITY, RUSSIA

Astronaut Terrence W. Wilcutt (Lt. Col., USMC) will replace James D. Halsell, Jr., (Lt. Col., USAF) as the NASA manager of operational activities at Star City, Russia.

The tenth astronaut to serve in this rotational position, Wilcutt will support the training and preparations of NASA astronauts at the Gagarin Cosmonaut Training Center, Star City. He will be the primary liaison between NASA and cosmonaut training center management, and will continue the operational and personal relationships with Star City management and the cosmonauts, as American astronauts live and work in Russia.

Wilcutt has three flights to his credit, including two missions to dock with Russia's Mir space station. He first flew as the pilot on STS-68 in 1994 on a mission studying the Earth's surface. In 1996, he was the pilot for STS-79, the fourth Shuttle-Mir docking mission, and in 1998, he commanded STS-89, the eighth docking mission.

For complete biographical information on Wilcutt or any astronaut, see the NASA Internet astronaut biography home page at URL:

http://www.jsc.nasa.gov/Bios/

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Brian Welch
Headquarters, Washington DC
(Phone: 202/358-1600)

July 22, 1998

RELEASE: 98-128

STATEMENT OF NASA ADMINISTRATOR DANIEL S. GOLDIN ON THE DEATH OF ALAN SHEPARD

The entire NASA family is deeply saddened by the passing of Alan Shepard. NASA has lost one of its greatest pioneers; America has lost a shining star.

Alan Shepard will be remembered, always, for his accomplishments of the past: being one of the original seven Mercury astronauts, for being the first American to fly in space, and for being one of only 12 Americans ever to step on the Moon. He should also be remembered as someone who, even in his final days, never lost sight of the future.

On behalf of the space program Alan Shepard helped launch, and all those that space program has and will inspire, we send our deepest condolences to his wife Louise, their children, and the rest of the Shepard family.

Alan Shepard lived to explore the heavens. On this his final journey, we wish him Godspeed.

- end -

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Don Savage
Headquarters, Washington, DC
(Phone: 202/358-1727)

July 22, 1998

Bill Steigerwald
Goddard Space Flight Center, Greenbelt, MD
(Phone: 301/286-5017)

RELEASE: 98-129

NEWLY DISCOVERED STELLAR CANNIBAL PROVIDES MISSING LINK

A newly-discovered star that is emitting rapid pulses of X-rays may be the long-sought missing link between old neutron stars that emit powerful flashes of X-rays, and older, rapidly spinning neutron stars that emit mainly radio waves.

The new star, called an X-ray pulsar, is designated SAX J1808.4-3658. It has greatly accelerated its own rotation at the expense of a nearby "companion" star by pulling gas from the companion onto its surface in a process called accretion. The fastest-spinning pulsar of its type ever seen, the newly discovered star is now rotating at more than 400 times per second (corresponding to a spin period of 2.5 milliseconds), making it the first known accretion-powered millisecond pulsar. Millisecond pulsars are neutron stars (extremely dense, city-sized stars) that rotate very rapidly; most complete one rotation in less than eight milliseconds (8/1000 of a second). Accretion occurs when gas from a nearby star gets pulled into the pulsar's strong gravitational field.

Two competing teams used NASA's Rossi X-ray Timing Explorer (RXTE) spacecraft to make the discovery. The first team, led by Dr. Michiel van der Klis and Rudy Wijnands of the University of Amsterdam, the Netherlands, discovered the pulsar and measured the time between rapid pulses of X-rays from the star to derive its rotation rate. The second team, led by Dr. Deepto Chakrabarty and Dr. Edward Morgan of the Massachusetts Institute of Technology, Cambridge, MA, discovered the two-hour orbital period of the pulsar and measured the size of the orbit, inferring the presence of a companion star. The results are being presented in the July 23 edition of the journal Nature.

"Astrophysicists have theorized for a long time that the only reason millisecond pulsars exist at all is that they get spun up by taking material from a companion star, but this is the first time one has been caught in the act. This has sometimes been called the Holy Grail of X-ray astronomy, and Rudy has at last found it!" said van der Klis.

- more -

"This 'stellar cannibal' is a leisurely diner," added Chakrabarty. "We estimate that it has been pulling material from its companion star for the last 100 million to one billion years. Over that time, the companion star may have lost up to half its mass. Currently, the companion is about 15 percent of the mass of the Sun." However, not all the companion's mass loss is due to accretion.

"Millisecond pulsars may throw away material they can't capture by 'vaporizing' their companion stars with X-rays and particle beams. As accreting gas falls on to the surface of the pulsar, it heats up and emits X-rays. The X-rays blow material from the companion star. After the accretion phase ends, the pulsar may emit a high velocity beam of subatomic particles that continues to blow material off the companion. Over a billion years, this bombardment may cause the companion to vanish altogether," said Dr. Tod Strohmayer, a member of the RXTE team located at NASA's Goddard Space Flight Center, Greenbelt, MD.

"This X-ray and particle beam ablation may explain why millisecond pulsars are often found alone, despite the fact that they required a companion star to speed up. By 'vaporizing' the companion, they hide the evidence - it's a stellar version of the perfect crime," added Strohmayer.

"In the case of the newly discovered pulsar, we found that its X-ray intensity is slightly fainter when it is on the far side of its orbit (with its companion between us and the pulsar). This is probably caused by an intervening 'fog' of material blown off the companion's surface -- direct evidence for 'vaporization' by the pulsar," said Chakrabarty.

The new pulsar helps scientists resolve a mystery. Prior to the discovery, two populations of neutron stars with relatively weak magnetic fields but with otherwise different characteristics were known. There were old, accreting neutron stars, which are powerful sources of X-rays generated from the material they are gobbling up from their companions, and the group of radiowave emitting pulsars that are rotating very rapidly and slowing down gradually. Scientists suspected there was a connection between the two, and the discovery of this pulsar that is both emitting X-rays and spinning rapidly provides the link.

Although the magnetic fields of these two neutron star types are much stronger than the Earth's field, they are relatively weak by pulsar standards. Scientists think the weak magnetic field allows the accretion process to spin the star up to a high rotation rate. After the accretion phase, X-ray emission from the pulsar ceases because there is no longer any infalling material to generate X-rays. The rotation speed begins to slow down at this point, because the accreting material was responsible for keeping the spin up as well. The pulsar's magnetic field rotates along with the star. The newly spun-up millisecond pulsar starts to emit radio waves as subatomic particles from its surface are accelerated into space by the pulsar's rotating magnetic field.

-end-

NOTE TO EDITORS: Still images from animation are available at:
FTP://PAO.GSFC.NASA.GOV/newsmedia/PULSAR

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Don Nolan-Proxmire
Headquarters, Washington, DC
(Phone: 202/358-1983)

July 22, 1998

Steve Roy
Marshall Space Flight Center, Huntsville, AL
(Phone: 256/544-6535)

RELEASE: 98-130

NASA RESEARCH HELPS MOLD BETTER PRODUCTS FOR HOME, AUTO AND AIRCRAFT INDUSTRY

Research in low-gravity has taken an important first step toward making metal products used in homes, automobiles and aircraft less expensive, safer and more durable.

Auburn University, Auburn, AL, and industry are partnering with NASA to develop the first accurate computer model predictions of molten metals and molding materials used in a manufacturing process called casting. Cast alloy parts are formed by mixing and pouring melted metals into a mold. The first commercial use of the new computer information is being made by Howmet Industries of Whitehall, MI, to more precisely design and cast aircraft turbine blades. In a similar activity, Ford Motor Company's Casting Plant in Cleveland, OH, is using the information developed by the new computer models to improve the casting process of automobile and light truck engine blocks.

"We're doing the long-range research that industry really needs to improve its final products," said Dr. Tony Overfelt, Director of the Solidification Design Center at Auburn University. "We're benefiting the American public, who pays for the research and uses the products."

Cast metal parts are used in 90 percent of all durable goods such as washing machines, refrigerators, stoves, lawn mowers, cars, boats and aircraft. Sales of cast parts in the United States alone total $25-30 billion a year, according to the American Foundrymen's Society, Des Plaines, IL.

"The NASA and Auburn University-led research project on turbine blade castings has enhanced our capabilities, helped us realize a cost savings and accelerated the development cycle for rocket hardware," said Dr. Thomas Tom, Director of Advanced Technology for Howmet Industries.

-more-

"Partnering with NASA offers unique research opportunities to improve methods of production used in the foundry industry to enhance the quality of castings," said American Foundrymen's Society director of research, Dr. Joe Santner. "Advanced research into new processes make casting more affordable, reliable and expands their utility," he added.

High-temperature metal alloy parts for the aerospace and auto industry can make aircraft and vehicles stronger, lighter and more efficient, but casting typically requires three-to-four years to develop an effective process.

"We started with experiments on the ground," Overfelt said. "Then we went aboard a NASA KC-135 aircraft flying an arc pattern in low-gravity to refine our research. Our goal is to continue to produce accurate measurements for all the alloys used by the casting industry. This information can be used by American manufacturers to standardize metal-mixing 'recipes' and to compete more effectively in the worldwide market."

Auburn University is one of NASA's 10 Commercial Space Centers. These centers serve as a focal point for NASA partnerships with industry and universities, encouraging unique space-related research opportunities to develop new products and services.

Other participants in the Auburn University-led casting research consortium are: the Anter Corporation, Pittsburgh, PA; Thermophysical Properties Research Laboratory Inc., West Lafayette, IN; PCC Airfoils Inc., Beachwood, OH; and the American Foundrymen's Society, Des Plaines, IL.

NASA's Commercial Space Center program is managed by the Space Product Development Office of the Microgravity Research Program at NASA's Marshall Space Flight Center, Huntsville, AL.

Note to Editors: In-person interviews with NASA, industry and university researchers are available by contacting Steve Roy at Marshall's Media Relations Office: (256) 544-6535. Interviews are also available via telephone, NASA/TV live satellite link or e-mail. More information about NASA's Space Product Development Office is available on the World Wide Web at:

http://microgravity.msfc.nasa.gov/MICROGRAVITY/SPD.html

- end -

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Peggy Wilhide
Headquarters, Washington, DC
(Phone: 202/358-1898)

July 22, 1998

Brian Welch
Headquarters, Washington, DC
(Phone: 202/358-1600)

Rob Navias
Johnson Space Center, Houston, TX
(Phone: 281/483-3671)

Howard Benedict
Astronaut Scholarship Foundation, Titusville, FL
(Phone: 407/269-6119)

RELEASE: 98-131

ALAN SHEPARD, FIRST AMERICAN ASTRONAUT, DIES AT 74

Alan B. Shepard, Jr., the first American to fly in space and one of only 12 humans who walked on the Moon, died Tuesday night after a lengthy illness in Monterey, CA. He was 74.

Shepard died at Community Hospital on the Monterey Peninsula, according to his family. The cause of death was not disclosed. Funeral services are pending.

"The entire NASA family is deeply saddened by the passing of Alan Shepard. NASA has lost one of its greatest pioneers; America has lost a shining star," said NASA Administrator Daniel S. Goldin.

"Alan Shepard will be remembered, always, for his accomplishments of the past; being one of the original Mercury astronauts, for being the first American to fly in space, and for being one of only 12 Americans ever to step on the Moon. He should also be remembered as someone who, even in his final days, never lost sight of the future," Goldin added.

- more -

"On behalf of the space program Alan Shepard helped launch, and all those that the space program has and will inspire, we send our deepest condolences to his wife, Louise, their children, and the rest of the Shepard family.

Alan Shepard lived to explore the heavens. On this final journey, we wish him Godspeed."

"Alan Shepard is a true American hero, a pioneer, an original. He was part of a courageous corps of astronauts that allowed us to reach out into space and venture into the unknown," said George W.S. Abbey, Director of the Johnson Space Center, Houston, TX. "Alan Shepard gave all of us the privilege to participate in the beginnings of America's great adventure of human space exploration. He will be greatly missed. The program has lost one of its greatest supporters and a true friend. Our thoughts and prayers are with his wife, Louise, and their family."

Named as one of the nation's original seven Mercury astronauts in 1959, Shepard became the first to carry America's banner into space on May 5, 1961, riding a Redstone rocket on a 15-minute suborbital flight that took him and his Freedom 7 Mercury capsule 115 miles in altitude and 302 miles downrange from Cape Canaveral, FL.

His flight followed by three weeks the launch of Soviet cosmonaut Yuri Gagarin, who on April 12, 1961, became the first human space traveler on a one-orbit flight lasting 108 minutes.

Although the flight of Freedom 7 was brief, it nevertheless was a major step forward for the U.S. in a rapidly-accelerating race with the Soviet Union for dominance in the new arena of space.

Buoyed by the overwhelming response to Shepard's flight, which made the astronaut an instant hero and a household name, President John F. Kennedy set the nation on a course to the Moon, declaring before a joint session of Congress just three weeks later, "I believe this nation should commit itself to achieving the goal, before the decade is out, of landing a man on the Moon and returning him safely to the Earth."

Over a three and a half year period from July 1969 to December 1972, a dozen Americans explored the lunar surface. Shepard was the fifth man to walk on the Moon, and the oldest, at the age of 47.

Shepard, however, was almost bypassed for a trip to the moon. He had to overcome an inner ear problem called Meuniere's syndrome that grounded him for several years following his initial pioneering flight.

An operation eventually cured the problem and Shepard was named to command the Apollo 14 mission. On January 31, 1971, Shepard, Command Module pilot Stuart Roosa and Lunar Module pilot Edgar Mitchell embarked for the Moon atop a Saturn 5 rocket. Shepard and Mitchell landed the lunar module Antares on February 5 in the Fra Mauro highlands while Roosa orbited overhead in the command ship Kitty Hawk.

Shepard planted his feet on the lunar surface a few hours later, declaring, "Al is on the surface, and it's been a long way, but we're here." During two excursions on the surface totaling nine hours, Shepard and Mitchell set up a science station, collected 92 pounds of rocks and gathered soil samples from the mountainous region.

Near the end of the second moonwalk, and just before entering the lunar module for the last time, Shepard—an avid golfer—hit two golf balls with a makeshift club. The first landed in a nearby crater. The second was hit squarely, and in the one-sixth gravity of the moon, Shepard said it traveled "miles and miles and miles."

Shepard's death leaves only four survivors among the original Mercury 7 astronauts: Sen. John Glenn, Scott Carpenter, L. Gordon Cooper and Walter Schirra.

Born Alan Bartlett Shepard, Jr. on Nov. 18, 1923, in East Derry, NH, he received a Bachelor of Science degree from the United States Naval Academy in 1944. Upon graduation, he married Louise Brewer, whom he met while at Annapolis. Shepard received his wings as a Naval aviator in 1947 and served several tours aboard aircraft carriers. In 1950, he attended Naval Test Pilot School at Patuxent River, MDS, and became a test pilot and instructor there. He later attended the Naval War College at Newport, RI, and after graduating, was assigned to the staff of the commander-in-chief, Atlantic Fleet, as an aircraft readiness officer.

In August 1974, Shepard, then a rear admiral, retired from both NASA and the Navy and became chairman of Marathon Construction Corp. in Houston. He later founded his own business company, Seven Fourteen Enterprises, named for his two missions on Freedom 7 and Apollo 14.

In 1984, he and the other surviving Mercury astronauts, along with Betty Grissom, the widow of astronaut Virgil I. (Gus) Grissom, founded the Mercury Seven Foundation to raise money for scholarships for science and engineering students in college. In 1995, the organization was renamed the Astronaut Scholarship Foundation. Shepard was elected president and chairman of the foundation, posts he held until October 1997, when he turned over both positions to former astronaut James A. Lovell.

Survivors include his widow, Louise, daughters Julie, Laura and Alice and six grandchildren.

The family has requested that in lieu of flowers, donations be made to the Astronaut Scholarship Foundation, 6225 Vectorspace Boulevard, Titusville, FL, 32780.

- end -

Video Advisory

National Aeronautics and
Space Administration
Washington, DC 20546
(202) 358-1600

For Release

Renee Juhans
Headquarters, Washington, DC
(Phone: 202/358-1712)

July 23, 1998

VIDEO ADVISORY: V98-80

HUBBLE SNAPS PORTRAIT OF YOUNG STARS

Today's video file provides a "family portrait" of young, ultra-bright stars nested in their embryonic cloud of glowing gases taken by NASA's Hubble Space Telescope. The celestial maternity ward, called N81, is probably the youngest cluster of massive stars ever seen in the nearby galaxy.

ITEM 1: MASSIVE STAR CLUSTER
Image of N81.

For more information contact Don Savage at (202) 358-1727 or Ray Villard at (410) 338-4514.

ITEM 2: REPLAY - ADMINISTRATOR DANIEL S. GOLDIN STATEMENT ON THE DEATH OF ALAN SHEPARD
ITEM 2a: REPLAY - ALAN SHEPARD B-ROLL
ITEM 2b: REPLAY - ALAN SHEPARD ORAL HISTORY
ITEM 3: REPLAY - CANNIBAL PULSAR
ITEM 4: REPLAY - MOLDING BETTER PRODUCTS

Video news file at noon, 3, 6, 9 p.m. and midnight EDT.

NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Don Savage
Headquarters, Washington, DC
(Phone: 202/358-1727)

July 23, 1998

Ray Villard
Space Telescope Science Institute, Baltimore, MD
(Phone: 410/338-4514)

Mohammad Heydari-Malayeri
Paris Observatory, Paris, France
(Phone: 33-1-40-51-20-76)

RELEASE: 98-132

NEARBY STAR CLUSTER YIELDS INSIGHTS INTO EARLY UNIVERSE

NASA's Hubble Space Telescope has taken a "family portrait" of young, ultra-bright stars nested in their embryonic cloud of glowing gases. The celestial maternity ward, called N81, is located 200,000 light-years away in the Small Magellanic Cloud, a small irregular satellite galaxy of our Milky Way. These are probably the youngest massive stars ever seen in the nearby galaxy.

The nebula offers a unique opportunity for a close-up glimpse of the "firestorm" accompanying the birth of extremely massive stars, each blazing with the brilliance of 300,000 of our suns. Such galactic fireworks were much more common billions of years ago in the early universe, when most star formation took place.

"This is giving us new insights into the physical mechanisms governing star formation in far away galaxies that existed long ago," says Mohammad Heydari-Malayeri, who headed the international team of astronomers who made the discovery using Hubble's Wide Field and Planetary Camera 2.

Because these stars are deficient in heavier elements, they also evolve much like the universe's earliest stars, which were made almost exclusively of the primordial elements hydrogen and helium that were created in the big bang. The Small Magellanic Cloud is a unique laboratory for studying star formation in the early universe since it is the closest and best seen galaxy containing so-called "metal-poor" first- and second -generation type stars.

- more -

These observations show that massive stars may form in groups. "As a result, it is more likely some of these stars are members of double and multiple star systems," says Heydari-Malayeri. "The multiple systems will affect stellar evolution considerably by ejecting a great deal of matter into space."

This furious rate of mass loss from these stars is evident in the Hubble picture, which reveals dramatic shapes sculpted in the nebula's wall of glowing gases by violent stellar winds and shock waves. "This implies a very turbulent environment typical of young star formation regions," Heydari-Malayeri adds.

He believes one of the members of the cluster may be an extremely rare and short-lived class of super-hot star (50,000 degrees Kelvin) called a Wolf-Rayet. This star represents a violent, transitional phase in the final years of a massive star's existence - before it ultimately explodes as a supernova.

"If confirmed by future Hubble observations, this finding will have a far-reaching impact on stellar evolutionary models," says Heydari-Malayeri. "That's because the Wolf-Rayet candidate is fainter than other such stars in that galaxy, in contrast with the predictions of these models." The team's work will be shortly submitted for publication in the European journal Astronomy and Astrophysics.

Hubble's resolution allows astronomers to pinpoint 50 separate stars tightly packed in the nebula's core within a 10 light-year diameter -- slightly more than twice the distance between Earth and the nearest star to our sun. The closest pair of stars is only one-third of a light-year apart. Before the Hubble observations, N81 was simply dubbed, "The Blob" because its features were indistinguishable by other telescopes.

The Space Telescope Science Institute is operated by the Association of Universities for Research in Astronomy, Inc. for NASA, under contract with NASA's Goddard Space Flight Center, Greenbelt, MD. The Hubble Space Telescope is a project of international cooperation between NASA and the European Space Agency.

- end -

NOTE TO EDITORS: A photo and caption associated with this release are available via the World-Wide Web at: http://oposite.stsci.edu/1998/25

Contract Announcement

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

David Steitz
Headquarters, Washington, DC
(Phone: 202/358-1730)

July 24, 1998

Susan Hendrix
Goddard Space Flight Center, Greenbelt, MD
(Phone: 301/286-0045)

RELEASE: c98-j

NASA SELECTS QUICK RIDE CONTRACTOR

NASA has awarded a contract to a Maryland firm to procure excess space aboard commercial satellites for various scientific and engineering missions.

NASA's Goddard Space Flight Center, Greenbelt, MD, has awarded an indefinite delivery/indefinite quantity contract known as "Quick Ride" to Final Analysis, Inc. of Lanham, MD. The contract, which has a maximum value of $49 million and a minimum ordering amount of $1,000, will allow for the placement of firm, fixed-price task orders within 30 days.

Under NASA's current contract consolidation initiative, any NASA Center along with other government agencies will be able to purchase excess space aboard commercial satellites for various Earth science, space science and technology instrumentation payloads, thus resulting in faster, better, cheaper science missions.

During contract performance, NASA will be developing a catalog for potential customers, which will include information regarding satellite launch dates, intended orbits, and configuration of available space for each contractor participating in Quick Ride.

A precedent setting contractual mechanism under the Quick Ride contract called "On-Ramps" will allow NASA to solicit additional proposals and accept unsolicited proposals from commercial satellite firms during the contract's five-year performance period, thus allowing NASA to provide additional Quick Ride services to potential customers.

-more-

NASA's intent is for Quick Ride to conform with commercial industry practices. Government-provided instrumentation and/or payloads will be expected to conform to the accommodations onboard the commercial satellites in order to prevent any impact to commercial integration and launch schedules or primary payloads.

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Beth Schmid
Headquarters, Washington, DC
(Phone: 202/358-1760)

July 27, 1998

Jerry Berg
Marshall Space Flight Center, Huntsville, AL
(Phone: 256/544-0034)

RELEASE: 98-133

STUDENTS AT WORK IN NASA SUMMER INTERNSHIP PROGRAM

Thirty-three college students from around the country are at NASA's Marshall Space Flight Center, Huntsville, AL, gaining firsthand knowledge about the U.S. space program -- and conducting real-life space research in the process. The Summer Scholars Internship Program, which began May 26 and concludes July 31, is giving students the experience of working at NASA.

"It's a 10-week program, pairing students with NASA researchers to conduct studies in various areas of engineering and space science," said Marshall's Willie Love. "This program creates a 'win-win-win' environment. The students win, NASA wins and the colleges and universities win," said Love.

In addition to conducting research, students attend discussions with government and industry representatives to gain insight into space program decision-making and project management.

"There is no greater teacher than experience," said Love. "These students will use what they've learned from this experience throughout their educational and professional careers."

The Summer Scholars Internship Program is sponsored by Marshall's Equal Opportunity Office. A list of the students' names and hometowns is available at the following website:

ftp://ftp.hq.nasa.gov/pub/pao/pressrel/1998/98-133a.txt

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Brian Welch
Headquarters, Washington, DC
(Phone: 202/358-1600)

July 27, 1998

Bruce Buckingham
Kennedy Space Center, FL
(Phone: 407/867-2468)

Eileen Hawley
Johnson Space Center, Houston, TX
(Phone: 281/483-5111)

RELEASE: 98-134

GUIDELINES FOR MEDIA COVERAGE OF STS-95

As the launch of Discovery on the STS-95 mission approaches, news media planning to cover the flight are encouraged to make logistical arrangements as early as possible. Heavy media interest in the mission will challenge the resources of NASA's Kennedy Space Center in Florida and Johnson Space Center in Houston.

Each center will have a limited amount of working space and phone and power capability available to accredited media, which may result in some restrictions on the number of media representatives who can be supported. To assist in NASA's pre-mission planning, media intending to cover the mission should request accreditation and logistical support no later than close of business Aug. 14, 1998.

The following contact information is provided to guide media through the accreditation process.

Accreditation Requests: Requests for accreditation for launch at the Kennedy Space Center, FL, should be faxed to the Kennedy newsroom at 407/867-2692, attention: Selina Scorah. Requests should include the names of the media representatives attending, social security or passport number, and date of birth, and must be on official letterhead of the sponsoring organization. Badges issued by Kennedy for launch will be honored for mission coverage at the Johnson Space Center and a separate request does not have to be sent to Johnson.

-more-

Media planning to cover the mission from Johnson, without first being accredited by Kennedy, should submit a faxed accreditation request to the Johnson newsroom at 281/483-2000, attention: Laura Rochon. Requests should include the names of the media representatives attending, social security or passport number, and date of birth, and must be on official letterhead of the sponsoring organization.

Audiovisual and Television Logistics: For assistance in requesting documentation of crew training, or other audio and video products, as well as making arrangements for television or audio support for coverage of the mission, media should contact:

Kennedy: Bill Johnson at the press site at 407/867-2468 or 7819.

Johnson: Carlos Fontanot, through the newsroom at 281/483-5111.

Telephones and Workspace: Workspace and telephone and electrical connections may be limited. For logistical support contact:

Kennedy: Lisa Fowler at the press site at 407/867-2468. Workspace reservations as well as guidelines and instructions for obtaining and activating phone lines will be provided to accredited media, but media must contact BellSouth directly to install and activate the phone lines.

Johnson: Laura Rochon, through the newsroom at 281/483-5111. Workspace reservations as well as guidelines and instructions for obtaining and activating phone lines will be provided to accredited media, but media must contact Southwestern Bell directly to install and activate the phone lines.

Mission Information and Inquiries: For general information on mission coverage and background information on the crew and mission objectives, contact the NASA newsrooms at the numbers listed above. An advance look at the STS-95 mission is available on the internet at URL: http://www.shuttle.nasa. gov.

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Brian Welch
Headquarters, Washington, DC
(Phone: 202/358-1600)

July 28, 1998

Eileen Hawley
Johnson Space Center, Houston, TX
(Phone: 281/483-5111)

NOTE TO EDITORS: N98-48

AUGUST 1 MEMORIAL SERVICE PLANNED FOR ALAN SHEPARD

A memorial service honoring the life of Alan Shepard (Rear Admiral, USN, Ret.), the first American in space, will take place at NASA's Johnson Space Center, Houston, TX, at 2 p.m. CDT Saturday, Aug. 1, in the Teague Auditorium. Attendance at the service is limited to family members, invited dignitaries and NASA employees.

Family friends and long-time associates will pay tribute to Shepard and honor his memory further by planting a tree in the Astronaut Memorial Grove on the Johnson grounds following the ceremony in Teague Auditorium. The day's observances will conclude at approximately 3:30 p.m. CDT with a "missing man" fly-over by NASA astronauts.

Limited space for accredited media representatives wishing to cover the ceremony at Teague will be available. Media representatives wishing to cover the activities must notify the Johnson newsroom by fax (281/483-2000) before 5 p.m. CDT, Thursday, July 30, for accreditation and badging. All set-up activity must be complete and news media must be in position in Teague Auditorium by 1:15 p.m. CDT. Satellite trucks will be parked behind the auditorium and may start setting up at 11:30 a.m. CDT.

While the observances are not open to the public, the ceremony will be shown live on NASA Television, which may be found at GE-2, transponder 9C at 85 degrees West longitude, vertical polarization, with a frequency of 3880 MHz and audio of 6.8 Mhz.

- end -

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Jim Cast
Headquarters, Washington, DC
(Phone: 202/358-1779)

July 28, 1998

Les Dorr
FAA Headquarters, Washington, DC
(Phone: 202/267-3461)

NOTE TO EDITORS: N98-49

NASA TO UPDATE AERONAUTICS PROGRAMS AT FLY-IN CONVENTION

An update on aeronautics and space technology topics will be presented Saturday, Aug. 1, at the annual Experimental Aircraft Association (EAA) Fly-In and Convention, recently renamed AirVenture, in Oshkosh, WI. The NASA/FAA Aviation R&D Briefing at 10 a.m. CDT in the EAA press tent will cover the following highlights:

- Approaching the one-year mark for NASA's new aeronautics and space technology goals

- First air traffic control tower simulator under construction

- General aviation accomplishments:
  -- New technology-equipped airplanes coming to market.
  -- New materials certification process promising up to $1 million savings per airplane.
  -- First pilot graduating from streamlined training course.
  -- Flight tests proving cockpit technologies.
  -- First statewide digital datalink providing real-time weather.
  -- Reducing the cost of lightning protection.
  -- Propulsion research filling the "GAP."
  -- New piston engine at half the price.
  -- New turbine engine promising high performance at competitive price.

- National Aviation Safety Program first-year accomplishments, including:
  -- Conducting flight tests to detect clear air turbulence.
  -- Selecting industry teams to develop aviation weather information for cockpit.

-more-

- NASA/FAA/EAA National General Aviation university contests:
  -- Introduction of Kansas universities "Design-it, Build-it, Fly-it" teams.
  -- Announcement of "Design Competition" winning teams.

To contact NASA public affairs personnel during the Oshkosh event, media representatives should call 920/235-4969.

- end -

Video Advisory

National Aeronautics and
Space Administration
Washington, DC 20546
(202) 358-1600

For Release

Renee Juhans
Headquarters, Washington, DC
(Phone: 202/358-1712)

July 29, 1998

VIDEO ADVISORY: V98-82

LAUNCHING TOWARD THE FUTURE: X-34 COMPLETES CRITICAL MILESTONE

Today's video file provides animation and interviews on the first wing assembly for NASA's X-34 technology demonstrator that has completed qualification testing and has been delivered and mated to the vehicle at Orbital Sciences' facility in Dulles, VA. Flights of the air-launched X-34 are scheduled to begin next year along with its sister vehicle, the larger X-33.

ITEM 1: X-34 FLIGHT SIMULATION
Animation of a typical X-34 flight.
ITEM 1a: INSTALLATION OF X-34 WING ASSEMBLY
B-roll of X-34 wing assembly.
ITEM 1b: INTERVIEW - DR. ROBERT E. LINDBERG, ORBITAL SCIENCES CORP. VICE PRESIDENT AND X-34 PROGRAM MANAGER
ITEM 1c: INTERVIEW - JOHN LONDON, X-34 PROGRAM MANAGER, MARSHALL SPACE FLIGHT CENTER

For more information contact Jim Cast at (202) 358-1779.

Video news file at noon, 3, 6, 9 p.m. and midnight EDT.

NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Jim Cast
Headquarters, Washington, DC
(Phone: 202/358-1779)

July 29, 1998

Dom Amatore
Marshall Space Flight Center, Huntsville, AL
(Phone: 256/544-0031)

Barron Beneski
Orbital Sciences Corp., Dulles, VA
(Phone: 703/406-5528)

RELEASE: 98-136

X-34 COMPLETES CRITICAL MILESTONE

The first wing assembly for NASA's X-34 technology demonstrator has completed qualification tests and has been shipped to the prime contractor, Orbital Sciences Corporation, Dulles, VA, where it has been mated to the X-34 test article under construction there.

Integration of the wing assembly with the test article fuselage marks a major milestone in the program. Flights of the air-launched X-34 are scheduled to begin next year in conjunction with flights of its larger and more advanced sister ship, the X-33.

The newly qualified X-34 wing assembly, intended for flight, has been installed, initially, on a full-scale X-34 test article at Orbital. The test article will be used for X-34 verification and certification. This first wing assembly will ultimately fly aboard one of two flight vehicles also under construction at Orbital.

The sub-orbital X-34 and X-33 vehicles will demonstrate key technologies -- at high speeds and high altitudes -- leading toward the development of full scale, commercially operated reusable launch vehicles after the turn of the century. The ultimate objective of these efforts is to dramatically reduce the cost of placing payloads into space.

- end -

Video Advisory

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

For Release

Renee Juhans
Headquarters, Washington, DC
(Phone: 202/358-1712)

July 30, 1998

VIDEO ADVISORY: V98-83

FUTURE OF FLIGHT: NEXT GENERATION OF AIRPLANES; STUDENTS AT WORK IN NASA SUMMER INTERNSHIP PROGRAM

Today's video file provides animation and b-roll on research being done by NASA and the aerospace industry which will help to develop the next generation of aircraft. Also on NTV is footage on how minority and physically challenged college students from around the country are gaining firsthand knowledge about the U.S. space program by working at NASA's Marshall Space Flight Center, Huntsville, AL.

ITEM 1: HIGH SPEED CIVIL TRANSPORT--L.A. TO TOKYO
ITEM 1a: TUNNEL TEST
ITEM 1b: HSCT COCKPIT ANIMATION
ITEM 1c: AIRCRAFT B ROLL (AGATE)
ITEM 1d: AGATE ANIMATION
ITEM 1e: THE BLENDED WING BODY
ITEM 1f: CIVILIAN TILTROTOR AIRCRAFT

For more information contact Ivelisse Gilman at (757) 864-5036.

ITEM 2: HANDS ON EXPERIENCE (REPLAY)
ITEM 2a: INTERVIEW - WILLIE LOVE, NASA EQUAL OPPORTUNITY OFFICE, MARSHALL SPACE FLIGHT CENTER
ITEM 2b: INTERVIEW - JESSIE LEAMAN, NASA INTERN FROM EAST STROUDSBURG, PA

For more information contact Beth Schmid at (202) 358-1760 or Jerry Berg at (256) 544-0034.

ITEM 3: REPLAY - X-34 FLIGHT PACKAGE

Video news file at noon, 3, 6, 9 p.m. and midnight EDT.

NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

-end-

News Release

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

Renee Juhans
Headquarters, Washington, DC
(Phone: 202/358-1712)

Eileen M. Hawley/Doug Peterson
Johnson Space Center, Houston, TX
(Phone: 281/483-5111)

For Release
July 30, 1998

RELEASE: 98-137

FUTURE SPACE STATION RESIDENT JOINS ASSEMBLY CREW

Veteran cosmonaut Sergei Krikalev, who will be one of the first full-time residents on board the International Space Station, will join the crew of STS-88, the first American assembly mission.

Krikalev will join Commander Robert D. Cabana, (Col., USMC); Pilot Frederick "Rick" Sturckow (Major, USMC); Mission Specialists Nancy Currie (Major, USA); Jerry Ross (Col., USAF); and Jim Newman, Ph.D., when Endeavour launches in December.

The seven-day mission will be highlighted by the mating of the U.S.-built "Unity" module to the Russian-built "Zarya" control module, which will already be in orbit. Zarya, which was built for NASA by Boeing and the Krunichev Enterprise, is scheduled for launch on a Russian Space Agency Proton rocket from the Baikonur Cosmodrome in Kazakstan this November.

"Sergei's experience with both the U.S. and Russian programs and his familiarity with the Shuttle make him a valuable addition to this crew," said David C. Leestma, director of Flight Crew Operations at NASA's Johnson Space Center, Houston, TX.

A cosmonaut since 1985, Krikalev has accumulated more than one year and three months in space as a member of two Mir space station crews. He has flown on board the Shuttle once before, as a member of the STS-60 crew in February 1994. During that nine-day mission, Krikalev operated the Shuttle's robot arm and supported a wide variety of materials science experiments. Throughout the joint Shuttle/Mir program, he actively supported operations, working with ground controllers in Johnson's Mission Control.

For more information on Krikalev and other astronauts, go to:

http://www.jsc.nasa.gov/Bios/
http://station.nasa.gov/

-end-

News Release

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

For Release

Renee Juhans
Headquarters, Washington, DC
(Phone: 202/358-1712)

July 30, 1998

Eileen M. Hawley/Doug Peterson
Johnson Space Center, Houston, TX
(Phone: 281/483-5111)

RELEASE: 98-138

TRAINING BEGINS FOR CREW OF NEXT HUBBLE SPACE TELESCOPE SERVICING MISSION

A team of veteran astronauts will begin training to install new instruments and upgrade systems to enhance the scientific capabilities of the orbiting Hubble Space Telescope.

Crew members Steven L. Smith; C. Michael Foale, Ph.D.; European Space Agency astronaut Claude Nicollier; and John M. Grunsfeld, Ph.D., will conduct a record six space walks during the STS-104 mission, scheduled for launch in May 2000. Smith will be the payload commander, coordinating the astronauts' space-walking activities.

"The ambitious nature of this mission, with its six space walks, made it important for the payload crew to begin its training as early as possible," said David C. Leestma, director of Flight Crew Operations at NASA's Johnson Space Center, Houston, TX.

The crew will rendezvous with and capture the orbiting Hubble Space Telescope, and secure it in Columbia's payload bay using the Shuttle's robot arm. Then, working in teams of two, the veteran astronauts will venture into the payload bay performing a variety of tasks that will improve the productivity and reliability of the telescope.

To enhance Hubble's scientific capability, the astronauts will remove the Faint Object Camera and replace it with the Advanced Camera for Surveys. With its three electronic cameras and complement of filters, this camera is expected to improve the telescope's sensitivity in the ultraviolet range by a factor of ten.

Other primary tasks to be accomplished during the flight include the replacement of Fine Guidance Sensor #2, one of three such devices that help to accurately point the telescope; replacement of the existing solar arrays with rigid, high efficiency arrays; and replacement of a tape recorder with a solid state recorder.

-more-

Secondary tasks include the installation of an aft-shroud cooling system to upgrade the thermal protection of some of the telescope's systems; the installation of a new technology cryogenic cooler for the Near Infrared Camera and Multi-Object Spectrometer instrument, known as the NICMOS Cooling System; and the installation of six voltage/temperature improvement kits, which will improve Hubble's battery charge capability.

In addition, the astronauts will repair and replace much of the multi-layer exterior thermal insulation on the sun-facing side of the telescope. In February 1997, the STS-82 crew noticed peeling on several areas of the insulation and applied four patches to the most affected areas.

Both Smith and Nicollier have previous experience with Hubble. Smith performed three space walks during the second Hubble servicing mission in February 1997. Nicollier operated the Shuttle's robot arm during the first visit to the telescope during the STS-61 mission in 1993. Foale has conducted space walks from both the Space Shuttle and Russia's Mir space station, accumulating more than 10 hours of space-walking experience. Grunsfeld has two previous space flights to his credit.

For more information on the astronauts or the Hubble Space Telescope, go to:

http://www.jsc.nasa.gov/Bios/
http://oposite.stsci.edu

-end-

News Release

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

For Release

Renee Juhans
Headquarters, Washington, DC
(Phone: 202/358-1712)

July 30, 1998

Eileen M. Hawley/Doug Peterson
Johnson Space Center, Houston, TX
(Phone: 281/483-5111)

RELEASE: 98-138

TRAINING BEGINS FOR CREW OF NEXT HUBBLE SPACE TELESCOPE SERVICING MISSION

A team of veteran astronauts will begin training to install new instruments and upgrade systems to enhance the scientific capabilities of the orbiting Hubble Space Telescope.

Crew members Steven L. Smith; C. Michael Foale, Ph.D.; European Space Agency astronaut Claude Nicollier; and John M. Grunsfeld, Ph.D., will conduct a record six space walks during the STS-104 mission, scheduled for launch in May 2000. Smith will be the payload commander, coordinating the astronauts' space-walking activities.

"The ambitious nature of this mission, with its six space walks, made it important for the payload crew to begin its training as early as possible," said David C. Leestma, director of Flight Crew Operations at NASA's Johnson Space Center, Houston, TX.

The crew will rendezvous with and capture the orbiting Hubble Space Telescope, and secure it in Columbia's payload bay using the Shuttle's robot arm. Then, working in teams of two, the veteran astronauts will venture into the payload bay performing a variety of tasks that will improve the productivity and reliability of the telescope.

To enhance Hubble's scientific capability, the astronauts will remove the Faint Object Camera and replace it with the Advanced Camera for Surveys. With its three electronic cameras and complement of filters, this camera is expected to improve the telescope's sensitivity in the ultraviolet range by a factor of ten.

Other primary tasks to be accomplished during the flight include the replacement of Fine Guidance Sensor #2, one of three such devices that help to accurately point the telescope; replacement of the existing solar arrays with rigid, high efficiency arrays; and replacement of a tape recorder with a solid state recorder.

-more-

Secondary tasks include the installation of an aft-shroud cooling system to upgrade the thermal protection of some of the telescope's systems; the installation of a new technology cryogenic cooler for the Near Infrared Camera and Multi-Object Spectrometer instrument, known as the NICMOS Cooling System; and the installation of six voltage/temperature improvement kits, which will improve Hubble's battery charge capability.

In addition, the astronauts will repair and replace much of the multi-layer exterior thermal insulation on the sun-facing side of the telescope. In February 1997, the STS-82 crew noticed peeling on several areas of the insulation and applied four patches to the most affected areas.

Both Smith and Nicollier have previous experience with Hubble. Smith performed three space walks during the second Hubble servicing mission in February 1997. Nicollier operated the Shuttle's robot arm during the first visit to the telescope during the STS-61 mission in 1993. Foale has conducted space walks from both the Space Shuttle and Russia's Mir space station, accumulating more than 10 hours of space-walking experience. Grunsfeld has two previous space flights to his credit.

For more information on the astronauts or the Hubble Space Telescope, go to:

http://www.jsc.nasa.gov/Bios/
http://oposite.stsci.edu

-end-

Contract Announcement

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

July 31, 1998

Sonja Alexander
Headquarters, Washington, DC
(Phone: 202/358-1761)

RELEASE: c98-k

NASA SELECTS NATIONSBANK AS NEXT CREDIT CARD PROVIDER

NASA has selected Nationsbank, Charlotte, NC to be its next credit card provider for fleet, travel and purchase cards. Nationsbank is one of six banks awarded master contracts by the General Services Administration (GSA). NASA will issue a task order agreement for all three card types through GSA, to be effective Nov. 30, 1998, for up to ten years, including options.

NASA spends approximately $100 million per year through credit card services. This no-cost agreement with Nationsbank for all three card types will allow NASA to pursue integrated services that will streamline processes and gain efficiencies.

NASA currently uses three different GSA card providers: American Express for travel cards, Rocky Mountain Bank for purchase cards, and Wright Express for fleet cards. The existing card agreements expire on November 29, 1998.

-end-

Video Advisory

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

For Release

Ray Castillo
Headquarters, Washington, DC
(Phone: 202/358-4555)

July 31, 1998

VIDEO ADVISORY: V98-84

WASHINGTON FIRES FROM SPACE

Today's video file provides an image of the smoke from fires near Bickleton, Washington. This image was taken Wednesday, July 29 from NASA's Sea Viewing Wide Field Spectrometer (SeaWiFS) sensor onboard the SeaStar Satellite.

ITEM 1: WASHINGTON FIRES

For more information contact Wade Sisler (301) 286-6256 or David Steitz (202) 358-1730.

ITEM 2: REPLAY - FUTURE OF FLIGHT PACKAGE

For more information contact Ivelisse Gilman at (757) 864-5036.

Video news file at noon, 3, 6, 9 p.m. and midnight EDT.

NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Michael Braukus
Headquarters, Washington, D.C.
(Phone: 202/358-1979)

July 31, 1998

Keith Henry
Langley Research Center, Hampton, VA
(Phone: 757/864-6120)

Lori Rachul
Lewis Research Center, Cleveland, OH
(Phone: 216/433-8806)

Les Dorr
FAA Headquarters, Washington, D.C.
(Phone: 202/267-3461)

RELEASE: 98-139

LIGHT PLANE TECHNOLOGIES COMING TO MARKET

The government-industry effort to revitalize the U.S. light airplane industry is rapidly turning promises into accomplishments. Leaders of both the Advanced General Aviation Transport Experiment (AGATE) consortium and the NASA General Aviation Propulsion (GAP) program are reporting impressive progress, according to a senior NASA official.

"These accomplishments are laying the foundation for a small aircraft transportation system that will make personal air travel for business or pleasure a safe, affordable transportation alternative," said Michael B. Mann, NASA's Deputy Associate Administrator for Aeronautics and Space Transportation Technology.

"Newly developing technologies and procedures are allowing us to move from the research stage to practical use. Even the challenging task of developing a lightweight, affordable jet engine for personal airplanes is coming along quickly through NASA's GAP program," he added.

Mann's comments were made at a joint NASA, FAA and U.S. industry news briefing held today at AirVenture '98, the Experimental Aircraft Association (EAA) annual Fly-In and Convention, Oshkosh, WI. Other briefing participants included Anne Harlan, Federal Aviation Administration's Director of the William J. Hughes Technical Center, Atlantic City, NJ.

- more -

Among the accomplishments highlighted:

AGATE-EQUIPPED AIRPLANES COMING TO MARKET

- Cirrus SR20, Cirrus Design Corp., Duluth, MN
- Lancair Columbia 300, Lancair International Inc., Redmond Bend, OR

The first two production airplanes to offer extensive AGATE technology are being introduced this summer, with customer deliveries expected to begin by the end of the year. FAA flight certification is expected for both airplanes this fall. These pioneering airplanes boast of value, performance, comfort and safety. AGATE technology contributes to ease of operation through single-lever power control and multi-function display of satellite navigation and airport information. The display technology will also handle graphical display of real-time weather, terrain and digital air-to-ground communications when available in the near future. Other AGATE technologies reflected in these new airplanes include advanced lightweight and aerodynamically efficient composite materials (graphite-epoxy, for example). AGATE safety advances are seen in energy-absorbing structures and improved safety harness systems that improve crashworthiness.

NEW PROCESS PROMISING UP TO $1 MILLION SAVINGS PER NEW AIRPLANE

Time and costs of certifying materials for new single-engine airplane designs will be dramatically reduced with the adoption of an AGATE-developed certification process. The process promises to cut materials certification for a new design from two years to six months and from $600,000-$1,000,000 to $30,000. The National Institute for Aviation Research, Wichita State University, Wichita, KS, is conducting research to validate the overall process to meet FAA certification standards. The idea is that the AGATE consortium will pool resources to spread the costs of initial research and certification for each material of interest. The data will go into a handbook, specifying the exact process to be followed in order to receive a speedy certification from the FAA. The first two aircraft to make use of the new process are the Cirrus SR20 and Lancair Columbia 300 (see first item, above). They will be the first composite material four-seat AGATE-type airplanes to be certified in the U.S.

FIRST PILOT GRADUATING FROM STREAMLINED TRAINING COURSE

The first student has successfully completed a unified flight training curriculum that earned her both a visual and an instrument pilot rating. The AGATE-developed curriculum was administered by Embry-Riddle Aeronautical University, Melbourne, FL. The curriculum simultaneously trains pilots in visual flight rules (VFR) and instrument flight rules (IFR) at significant time and cost savings over traditional methods which call for separate courses for separate ratings. The national average for receiving a basic private pilot license is approximately 72 hours of in-flight training over nine months. This is followed by instrument training of 104 hours over an additional nine months. The Embry-Riddle student completed the equivalent training with a 29 percent savings in ground and

flight training, a 20 percent savings in cost and an 83 percent savings in total elapsed time. The new training curricula is supported by NASA through the AGATE program, Embry-Riddle and the FAA Flight Standards District Office, Orlando, FL.

FLIGHT TESTS PROVING COCKPIT TECHNOLOGIES

Results from two series of ongoing flight experiments are expected to have a major impact on the standards that will be set for operating general aviation airplanes in the future. The AGATE experiments are validating advanced navigation and communications technologies developed to revolutionize how light airplane pilots interact with real-time weather and flight data information. A Cessna T210 has been test flown since December to learn more about the display and use of real-time weather in the cockpit. Preliminary results indicate that use of advanced cockpit weather displays reduces pilot activity while increasing the pilot's ability to accurately and safely navigate around hazardous weather. A Raytheon Bonanza has been test flown since January to assess the operational capabilities of digital datalinks. Results of this powerful new cockpit tool are encouraging. Potential applications are many, including the present test and evaluation of three attitude and heading reference systems expected to significantly enhance the pilot's awareness of his or her airplane's position and flight heading. Future plans for the Bonanza test airplane include the integration and demonstration of all AGATE technologies in a single cockpit.

FIRST STATEWIDE DIGITAL DATALINK PROVIDING REAL-TIME WEATHER

Virginia has inaugurated the nation's first statewide application of aviation digital datalink technology, establishing a public-private partnership that will set the pace for its introduction to other states in an effort to form a national system that may someday be global. At a ceremony July 9 in the state capital, Virginia Secretary of Transportation Shirley J. Ybarra praised AGATE member ARNAV Systems Inc., Puyallup, WA, the Small Aircraft Manufacturers Association and NASA's Langley Research Center for the successful partnership. Ybarra said that extension of the AGATE technology "will provide small business with safe, efficient and secure all-weather air transportation to urban and rural communities all over the country."

REDUCING THE COST OF LIGHTNING PROTECTION

AGATE members are working with Lightning Technology, Inc., Pittsfield, MA, to reduce the cost of lightning protection for small airplanes from the current $5,000 per airplane to $500 or less by next year. This ambitious goal is part of the AGATE effort to make future single-engine airplanes more affordable to more people. Lightning doesn't strike small aircraft often, but when it does it can cause significant damage to non-conducting components and digital cockpit systems. The company is evaluating airplane surface treatments such as low-cost lightweight metal meshes embedded in the advanced fiberglass-epoxy composite materials increasingly used in small airplane structures. Tests have applied simulated lightning effects (up to 200,000 amperes of current) to small "coupons" representing airplane skin and structure.

PROPULSION RESEARCH FILLING THE GAP

Two years after NASA's Lewis Research Center unveiled the General Aviation Propulsion (GAP) program, industry teams are reporting substantial progress in developing forerunners of the next generation of general aviation light aircraft engines. Development of the engines described below is on schedule for flight demonstration at EAA's AirVenture '00.

- New Piston Engine at Half the Price. An industry team led by Teledyne Continental Motors, Mobile, AL, has designed a highly advanced 200-hp compression ignition engine. The engine will use jet fuel and is designed to be priced at half the cost of current engines. Careful design consideration has been given to making this engine the smoothest and quietest piston engine to have ever flown in a general aviation aircraft. The design is now becoming reality. The first engine will be completed within the next few days, followed by a series of tests. The first aircraft installation is set for this time next year.

- New Turbine Engine Promises High Performance at Competitive Price. Williams International, Walled Lake, MI, and their industry team have designed a radically new turbofan engine which will make turbine engines affordable for small general aviation aircraft. This engine, known as the FJX-2, is a high-bypass-ratio turbofan that will produce 700 lbs. of thrust while weighing less than 100 lbs. Turbine engines are known for their good performance and quiet smooth operation. However, they have only been used on the top-of-the-line general aviation aircraft because a turbine engine propulsion system can cost more than an entire airplane. The FJX-2 has been designed to maintain excellent performance while being price-competitive with piston engines. Engine component testing has progressed at a good pace. The first full engine is scheduled to be completed and ready for testing by the end of September.

For more information on the NASA/FAA/Industry AGATE program check the Internet at:
http://agate.larc.nasa.gov/

For more information on the NASA GAP program check the Internet at:
http://www.lerc.nasa.gov/WWW/AST/GAP.htm

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Michael Braukus
Headquarters, Washington, DC
(Phone: 202/358-1979)

August 1, 1998

Keith Henry
Langley Research Center, Hampton, VA
(Phone: 757/864-6120)

Mary Sandy
Virginia Space Grant Consortium, Hampton, VA
(Phone: 757/865-0726)

Les Dorr
FAA Headquarters, Washington, DC
(Phone: 202/267-3461)

RELEASE: 98-140

NASA AND FAA ANNOUNCE DESIGN COMPETITION WINNERS

NASA and the Federal Aviation Administration (FAA) today announced the winners of the 1998 National General Aviation Design Competition. The ceremony was held at AirVenture 98, the Experimental Aircraft Association's Annual Convention and Fly-In at Oshkosh, WI.

Now in its fourth year, the competition involves individuals or teams of undergraduate and graduate students from U.S. engineering schools participating in a major national effort to rebuild the U.S. general aviation sector. For the purpose of the contest, general aviation aircraft are defined as single-engine, fixed-wing aircraft for two to six passengers. In addressing design challenges for a small aircraft transportation system, the competition seeks to raise student awareness of the importance of general aviation and to stimulate breakthroughs in technology that can be applied in the general aviation market.

National goals for revitalizing the industry offer excellent, open-ended design challenges with real world applications. University faculty advisors consistently cite the value of this kind of educational experience for their engineering students.

-more-

The first place award was presented to a 27-member undergraduate team from Virginia Tech in Blacksburg, VA. Virginia Tech's winning design, dubbed "VicTor," is a single engine, four seat, high performance aircraft. The team's broad goal was "a fun-to-fly, safe, affordable aircraft prepared to fly on the 'highway in the sky' of the twenty-first century." The sleek airframe design features an ergonomic cockpit with adjustable side control sticks and dual airbags, a choice between two high performance engines, and advanced technology instrument displays. The design looks to the next century by providing an upgrade option to allow autonomous flight if it becomes a reality. The VicTor incorporates state-of-the-art manufacturing techniques and advanced composite materials. The review panel of general aviation experts was particularly impressed with the team's business plan and production data.

The first place award provides a total of $3,000 to design team members and a $5,000 award to the university's Department of Mechanical, Nuclear and Aerospace Engineering. The team also won a separate $3,000 award for the best use of technology developed by the Air Force Research Laboratory.

Second place honors went to Pennsylvania State University in University Park, for "Skipper 2," a high performance, two-person single-engine, composite fuselage, tractor-prop light airplane. The low wing design features a high-power engine and retractable landing gear. Other hallmarks are a user-friendly, multifunctional display cockpit, good stall characteristics and structural simplification for ease of manufacturing. To enhance all-weather capability, the design also features a weeping wing de-icing system, somewhat unusual for an airplane of this size. Crash-worthiness was also a major consideration. The team offered design variations for four-place, trainer and acrobatic versions of its aircraft. The design was developed by a 15-student team as part of a senior level design course. The second place award provides a prize of $2,000 to the student team.

Third place was awarded to a team of 13 undergraduate students from the University of Virginia, Charlottesville. For third place, the student team will share a $1,000 prize. The team was honored for developing a computer program that predicts drag, or resistance to air flow, in the design of new small passenger airplanes. One of the things that slows the development of new aircraft is the need for extensive flight testing of a prototype to determine the drag factors. The Virginia team recognized that a computer program that could do much of the drag prediction in the design phase would save time and money in the development of new and modified airplanes, speeding effective new designs to the marketplace.

The competition is managed for NASA and the FAA by the Virginia Space Grant Consortium. Guidelines are now available for the fifth annual competition to be held during the 1998-99 academic year. New criteria encourage both individual and team submissions, and designs ranging from components and subsystems to complete aircraft designs. Guidelines can be requested at 757/865-0726 or mls@penngrad.pgtt.odu.edu.

- end -

Video Advisory

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

For Release

Ray Castillo
Headquarters, Washington, DC
(Phone: 202/358-4555)

August 3, 1998

VIDEO ADVISORY: V98-85

A ROCKET ENGINE THAT INHALES?

Today's video file provides footage of an experimental, new air-breathing rocket engine. Also, the file is airing video of Leonardo, a piece of the International Space Station that arrived at Kennedy Space Center last weekend.

ITEM 1: ANIMATION OF AN AIR-BREATHING ROCKET
NASA and its industry partners have completed a series of tests demonstrating all the operating phases of an air-breathing rocket engine. This animation shows what such a rocket might look like.

ITEM 1a: ENGINE TESTING
B-roll

ITEM 1B: INTERVIEW - GARRY LYLES, ADVANCED SPACE TRANSPORTATION PROGRAM MANAGER

ITEM 1C: INTERVIEW - UWE HUETER, ADVANCED REUSABLE TECHNOLOGIES PROJECT MANAGER

For more information contact June Malone (256) 544-7061.

ITEM 2: LEONARDO ARRIVES AT KENNEDY SPACE CENTER

"Leonardo," one of three Italian Space Agency multi-purpose logistics modules that will be used to resupply the International Space Station, arrived this past weekend at NASA's Kennedy Space Center, FL, by a special "Beluga" air cargo plane from the factory of Alenia Aerospazio in Turin, Italy. Footage also includes Leonardo on a processing rack.

For more information contact George H. Diller (407) 867-2468 or Dwayne C. Brown (202) 358-1726.

Video news file at noon, 3, 6, 9 p.m. and midnight EDT.

NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Jim Cast
Headquarters, Washington, DC
(Phone: 202/358-1779)

August 3, 1998

June Malone
Marshall Space Flight Center, Huntsville, AL
(Phone: 256/544-7061)

RELEASE: 98-141

NASA SEEKS PROPOSALS FOR FUTURE-X

NASA's Marshall Space Flight Center, Huntsville, AL, today issued a NASA Research Announcement soliciting proposals for "Future-X," the first in a continuous series of flight demonstrations to validate technologies beyond those contained in the X-33 and X-34 technology demonstration programs. Proposals are due by Oct. 1, 1998.

The NASA Research Announcement calls for proposals for flight demonstrations of emerging technologies that require flight as a critical step in validating and maturing the technology. The technologies will be focused on substantially reducing the cost of space transportation.

In an effort to increase U.S. competitiveness in the worldwide commercial space transportation market and lower future government costs for space access, NASA is pursuing cutting-edge technologies that will dramatically lower the cost of getting to space. These advanced technology flight demonstrations are called Future-X.

"The Future-X series of demonstrations will push technology and clear the way for space development and exploration in the early years of the new century," said Gary E. Payton, Deputy Associate Administrator for Aeronautics and Space Transportation Technology at NASA Headquarters, Washington, DC.

The demonstrations will consist of flight vehicles or experiments to prove technologies that improve performance and lower development, production and operating costs of future earth-to-orbit and in-space transportation systems. Airframe system technologies will include propellant tanks, thermal protection systems, avionics and structures. Propulsion system technologies will include main propulsion systems, propellants and high temperature materials.

-more-

"Future-X sets the stage for developing a new generation of space launch vehicles that will be built faster and cheaper than previous vehicles," said Frederick Bachtel, manager of the space transportation programs office at Marshall. "For the first time, NASA will be able to readily test and validate new, state-of-the-art space transportation technologies in flight."

Projected funding of about $90 million through fiscal year 2002 is anticipated with awards scheduled for December. Awards are dependent upon the number and content of selected proposals and availability of funds.

A single award is planned for a flight vehicle and multiple awards are anticipated for flight experiments.

An industry briefing on the announcement is scheduled Aug. 7 at 9 a.m. CDT at Marshall. NASA Research Announcement 8-22 is available at the following Web site:

http://nais.msfc.nasa.gov/home.html

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Dwayne C. Brown
Headquarters, Washington, DC
(Phone: 202/358-1726)

August 3, 1998

George H. Diller
Kennedy Space Center, FL
(Phone: 407/867-2468)

RELEASE: 98-142

"LEONARDO" ARRIVES AT NASA'S KENNEDY SPACE CENTER

"Leonardo," one of three Italian Space Agency multi-purpose logistics modules that will be used to resupply the International Space Station, arrived last weekend at NASA's Kennedy Space Center, FL, on a special "Beluga" air cargo plane from the Alenia Aerospazio factory in Turin, Italy.

Scheduled to launch aboard Space Shuttle Endeavour (STS-100) in December 1999, "Leonardo" is a reusable logistics carrier that will be the primary delivery system to resupply and return station cargo requiring a pressurized environment. The cylindrical module is approximately 21 feet long and 15 feet in diameter, weighing almost 4.5 tons, excluding up to 20,000 pounds of contents.

The module will contain supplies, science experiments, spare parts and components for the International Space Station. Once Endeavour is in orbit, the module will be removed from the payload bay and docked to the space station using the remote manipulator arm of either the orbiter or the station. During each multi-purpose logistics module mission, supplies and scientific experiments will be exchanged for items to be returned to Earth, including completed experiments, equipment for repair, or trash and recyclables.

"Leonardo" is being processed at Kennedy's Space Station Processing Facility with engineering support from the Italian Space Agency, Alenia Aerospazio and Boeing. Among the activities necessary for the payload test team to prepare the module for launch are integrated electrical tests with other station elements in the facility, leak tests, electrical and software compatibility tests with the Space Shuttle using the Cargo Integrated Test Equipment, and an Interface Verification Test once the module is installed in the Space

-more-

Shuttle's payload bay at the launch pad. NASA's Marshall Space Flight Center, Huntsville, AL, provided the module's hardware development engineering oversight.

The most significant mechanical task to be performed on "Leonardo" in Kennedy's facility is the installation and outfitting of the racks for carrying the various experiments and cargo. The module will provide interfaces for up to 16 racks, five of which also furnish power, data and fluid support to a refrigerator freezer. The racks will be installed into the module using an efficient piece of robotic equipment called the "Rack Insertion Device." This device was developed by Kennedy engineers for fast and easy installation and removal of the racks for rapid turnaround of the logistics module between missions.

"Leonardo" is the first of three modules to be furnished to the International Space Station program by the Italian Space Agency. "Raffaello" is scheduled to arrive at Kennedy next year and "Donatello" in 2001.

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Jennifer McCarter
Headquarters, Washington, DC
(Phone: 202/358-1639)

August 4, 1998

Eileen Hawley/Doug Peterson
Johnson Space Center, Houston, TX
(Phone: 281/483-5111)

RELEASE: 98-143

CREWS NAMED TO SUPPORT 1999 SHUTTLE FLIGHTS

Thirteen astronauts have been named to support upcoming Shuttle missions, STS-96, -97 and -98, slated for launch next year and dedicated to continuing the on-orbit construction of the International Space Station.

Three-time Shuttle astronaut Kent V. Rominger (Cmdr., USN) will lead the crew of STS-96, a logistics and resupply mission for the International Space Station targeting a mid-May 1999 launch. Rick D. Husband (Lt. Col., USAF) will join Rominger on the flight deck of Discovery as pilot. Mission Specialists for the planned 10-day flight are Ellen Ochoa, Ph.D.; Tamara E. Jernigan, Ph.D.; Daniel T. Barry, M.D., Ph.D.; Canadian Space Agency astronaut Julie Payette; and Russian cosmonaut Yuri Malenchenko (Col., Russian Air Force).

STS-96 will follow the launch of the Zarya control module on a Russian vehicle in November 1998; the STS-88 mission in December 1998, delivering the American-built Unity module and two docking adapters; and the arrival of the Russian Service Module in April 1999. The STS-96 crew will be the first crew to visit the station following the arrival of the Service Module. During STS-96, Discovery will carry a variety of logistical and resupply items to ready the International Space Station for the arrival of the first resident crew in July 1999. The Shuttle will spend seven days docked to the uninhabited station, and Jernigan and Barry will conduct at least one spacewalk for assembly work.

Brent W. Jett Jr. (Cmdr., USN) will command the crew of Endeavour for STS-97 in August 1999, continuing construction of the International Space Station. He will be joined on board by pilot Michael J. Bloomfield (Major, USAF) and mission specialist Marc Garneau of the Canadian Space Agency. Astronauts Joseph R. Tanner and Carlos I. Noriega (Major, USMC) were named to the mission in June 1997, and will conduct two planned space walks.

-more-

The fourth American mission to build and enhance the capabilities of the International Space Station, STS-97 will deliver the first set of U.S.-provided solar arrays and batteries as well as radiators to provide cooling. The Shuttle will spend five days docked to the station, which at that time will be staffed by the first station crew. Two spacewalks will be conducted to complete assembly operations while the arrays are attached and unfurled. A communications system for voice and telemetry also will be installed.

In October 1999, Discovery will continue expansion of the International Space Station when astronaut Kenneth D. Cockrell commands STS-98. Cockrell will be joined by pilot Mark L. Polansky, a member of the 1996 astronaut class and mission specialist Marsha Ivins. Astronauts Mark C. Lee (Col., USAF) and Thomas D. Jones, Ph.D., previously named to the mission, are in training to support three planned space walks.

STS-98 will mark the arrival of the U.S. laboratory module, which will become the centerpiece of scientific research on the station. The Shuttle will spend six days docked to the station while the laboratory is attached and three spacewalks are conducted to complete its assembly. The laboratory will be launched with five equipment racks aboard, which will provide essential functions for station systems, including high data-rate communications and maintaining the station's orientation using control gyroscopes launched earlier. Additional equipment and research racks will be installed in the laboratory on subsequent Shuttle flights. This mission also will occur while the first station crew is aboard the new spacecraft.

Of the astronauts assigned to these flights, all but three have previous space flight experience. Cockrell has commanded a Shuttle mission previously. While they will be making their first flights as commanders, both Rominger and Jett have experience as Shuttle pilots in their earlier assignments. Mission specialists Jernigan, Ivins and Lee all have four previous missions to their credit; Jones has three; Ochoa, Garneau and Tanner have flown twice previously; and Barry, Bloomfield and Noriega have flown onboard the Shuttle once. Making their first flights will be Husband, Payette and Polansky.

For additional information on these astronauts, or any astronaut, see the NASA Internet biography home page at URL: http://www.jsc.nasa.gov/Bios/

For additional information on the International Space Station, visit the space station home page at URL: http://station.nasa.gov

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Beth Schmid
Headquarters, Washington, DC
(Phone: 202/358-1760)

August 4, 1998

RELEASE: 98-144

SHARP STUDENTS ARE WORKING AT NASA

NASA and Modern Technology Systems, Inc., selected 208 high school students to work at NASA centers in the 1998 Summer High School Apprenticeship Research Program (SHARP). SHARP is an intensive science and engineering apprenticeship program designed to increase, strengthen and diversify the pool of students for mathematics, science and engineering college majors and careers.

SHARP was initiated in 1980 and is sponsored by NASA's Education Division and participating NASA field installations. Since 1980, approximately 2,300 SHARP apprentices have participated in the program and more than 2,600 NASA employees have served as SHARP mentors. Studies from the SHARP Participant Database System reveal that 80 percent of former SHARP apprentices pursue majors in mathematics, engineering, science, or technology.

Each year SHARP offers a select group of high school students the opportunity to participate in the program for eight weeks during the summer. Once the students are selected, they are assigned to work with a NASA mentor in a specific area of science or technology.

SHARP apprentices are selected from an applicant pool of more than 1,300 talented students for apprenticeships at nine NASA field installations throughout the United States. This year the program began on June 1 and will continue through Aug. 14. During the apprenticeship, students have the opportunity to conduct meaningful research and participate in a variety of educational and professional activities.

The participating NASA field installations include: Ames Research Center, Moffett Field CA; Dryden Flight Research Center, Edwards, CA; Goddard Space Flight Center, Greenbelt, MD; Johnson Space Center, Houston, TX; Kennedy Space Center, FL; Langley Research Center, Hampton, VA; Lewis Research Center, Cleveland, OH; Marshall Space Flight Center, Huntsville, AL; and Stennis Space Center, MS.

The list of participating students by name and hometown can be found at the following URL: ftp://ftp.hq.nasa.gov/pub/pao/pressrel/1998/98-144a.txt

-end-

News Release

National Aeronautics and
Space Administration
Washington, DC 20546
(202) 358-1600

Don Savage/Doug Isbell
Headquarters, Washington, DC
(Phone: 202/358-1547)

Bill Steigerwald
Goddard Space Flight Center, Greenbelt, MD
(Phone: 301/286-5017)

Franco Bonacina
European Space Agency Headquarters, Paris, France
(Phone: 33-1-5369-7713)

For Release
August 4, 1998

RELEASE: 98-145

SOHO SPACECRAFT CONTACTED

Contact has been re-established with the European Space Agency (ESA)/NASA Solar and Heliospheric Observatory (SOHO) spacecraft following six weeks of silence.

Signals sent yesterday through the NASA Deep Space Network (DSN) station at Canberra, Australia, were answered by SOHO at 6:51 p.m. EDT in the form of bursts of signal lasting from two to ten seconds. These signals were recorded both by the NASA DSN station and the ESA station at Perth, Australia. Contact is being maintained through the NASA DSN stations at Goldstone, CA; Canberra; and Madrid, Spain.

Although the signals are intermittent and do not contain any data information, they show that the spacecraft is still capable of receiving and responding to ground commands.

"This is an excellent sign," said Dr. Joe Gurman, NASA SOHO Project Scientist at the Goddard Space Flight Center, Greenbelt, MD. "It means the spacecraft still has a heartbeat and gives us added optimism that we may be able to restore SOHO to scientific operation. Our next step, already underway, is to continue the careful process of attempting to re-establish control of the spacecraft. We will be attempting, in the near future, to begin data transmissions in order to get an assessment of SOHO's condition."

More information, images and status reports from SOHO can be found on the Internet at:

http://sohowww.nascom.nasa.gov/

- end -

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

David E. Steitz
Headquarters, Washington, DC
(Phone: 202/358-1730)

August 7, 1998

Tim Tyson
Marshall Space Flight Center, Huntsville, AL
(Phone: 256/544-0994)

George Diller
Kennedy Space Center, FL
(Phone: 407/867-2468)

NOTE TO EDITORS: N98-51

NASA SCIENTISTS TO HOLD MEDIA BRIEFING ON UPCOMING HURRICANE RESEARCH

NASA researchers and two of the nation's leading hurricane scientists will brief the media on upcoming research to look into the nature of hurricanes and tropical storms. The briefing will be held at the press site of NASA's Kennedy Space Center, FL, on Wednesday, Aug. 12, at 1 p.m. EDT. With an aim to improve hurricane and tropical storm predictions on the ground and to better understand the nature of these weather systems, two NASA research aircraft will take to the skies -- collecting very high-altitude information above and in Atlantic storms.

Briefing participants will be:

Dr. Ramesh Kakar
Earth Science Program Manager, NASA Headquarters, Washington, DC

Ms. Robbie Hood
Lead Mission Scientist, Global Hydrology and Climate Center,
Marshall Space Flight Center, Huntsville, AL

Dr. Ed Zipser
Tropical Rainfall Measuring Mission, Field Campaign Lead,
Texas A&M University, College Station, TX

Dr. Frank Marks
Field Program Director, Hurricane Research Division,
National Oceanic and Atmospheric Administration, Miami, FL

-more-

A tour of the two NASA Dryden Flight Research Center aircraft -- a DC-8 and ER-2 -- will be available to media on Aug. 12 at 3 p.m. EDT at Patrick Air Force Base, FL. Media wishing to tour the planes should report to the main gate of Patrick AFB to be escorted to the aircraft hangar.

Other organizations participating in the hurricane and tropical storm study will include:

- NASA's Ames Research Center, Moffett Field, CA
- NASA's Dryden Flight Research Center, Edwards, CA
- NASA's Goddard Space Flight Center, Greenbelt, MD
- NASA's Jet Propulsion Laboratory, Pasadena, CA
- NASA's Langley Research Center, Hampton, VA
- NASA's Wallops Flight Facility, Wallops Island, VA
- National Oceanic and Atmospheric Administration's Aircraft Operations Center, MacDill Air Force Base, Tampa, FL
- Massachusetts Institute of Technology, Cambridge
- University of Wisconsin, Madison
- Texas A&M University, College Station
- University of Maryland, Baltimore

The briefing will be carried live on NASA TV with two-way question-and-answer capability for media covering the event from participating NASA Centers. NASA Television is broadcast on the GE-2 satellite, located on Transponder 9C, at 85 degrees West longitude, vertical polarization, frequency 3880.0 Mhz, audio 6.8 MHz.

-end-

Video Advisory

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

For Release

August 7, 1998

Renee Juhans
Headquarters, Washington, DC
(Phone: 202/358-1712)

VIDEO ADVISORY: V98-87

STS-95 CREW MEMBERS TRAIN FOR UPCOMING LAUNCH

Today's video file provides footage of crew members training for the STS-95 mission, scheduled for launch in October 1998. The crew will be commanded by Curt Brown.

ITEM 1: GLENN GETS FITTED

B-roll of Senator John Glenn getting fitted for a flight suit and equipment required to fly onboard NASA's T-38 aircraft.

ITEM 2: SES TRAINING

Footage of Astronauts Steve Robinson and Scott Parazynski training in the Systems Engineering Simulator to deploy and retrieve the Spartan satellite.

ITEM 3: SPACEHAB TRAINING

B-roll of STS-95 crew members in the Spacehab Training Mockup, and suit up for training in the flight hardware.

ITEM 4: HEAVY AIRCRAFT TRAINING

Footage of STS-95 Commander Curt Brown and Pilot Steve Lindsey in the cockpit of NASA's KC-135, flying the aircraft and disembarking.

For more information contact Eileen Hawley at (281) 483-5111 or Doug Ward at (281) 483-6593.

Video news file at noon, 3, 6, 9 p.m. and midnight EDT.

NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

David E. Steitz
Headquarters, Washington, DC
(Phone: 202/358-1730)

August 7, 1998

Lanee Cooksey
Stennis Space Center, MS
(Phone: 228/688-3341)

RELEASE: 98-148

PRODUCTS SELECTED FOR SECOND PHASE OF EARTH SCIENCE DATA PURCHASE

Five offers have been selected for continuation into the second phase of NASA's purchase of Earth science data products that help meet the agency's scientific requirements.

"We are very pleased that the products we have chosen will provide NASA with valuable scientific data for our Earth sciences efforts," said Dr. Ghassem Asrar, Associate Administrator for NASA's Office of Earth Sciences, Washington, DC. "This purchase continues the multifaceted process of NASA working more aggressively with industry and other non-governmental organizations to advance scientific understanding of our Earth as a total environmental system."

The U.S. Congress approved the plan to initiate the data purchase activity in the fiscal 1997 NASA budget. The program is managed by the NASA Commercial Remote Sensing Program at Stennis Space Center, MS, the agency's lead center for fostering commercial applications of NASA Earth science data and related technology.

A Phase I Request For Offers was made by NASA in May 1997 to provide unique simulated or prototype Earth science data products for science assessment and validation. The Phase II information will be used by research teams within NASA's Earth Science enterprise, which manages the agency's portion of an internationally coordinated research effort to study the Earth's land, oceans, atmosphere, ice and life as a global environmental system.

"By purchasing data upon delivery from the private sector instead of developing, building and launching new satellites, NASA may be able to conduct and expand its scientific investigations at a much lower cost, while encouraging the growth of this economic area," Asrar said.

-more-

Selected products were based on several criteria, including "best science value" to the government, and the degree to which the offered data met the business and performance characteristics of the solicitation, including scientific utility and data rights. The combined Phase I and Phase II data purchases are valued at approximately $50 million.

The following companies were selected for the data purchase:

Earth Satellite Corporation
Rockville, MD
Product: Geo-Cover™, georeferenced Landsat global data set

Positive Systems, Inc.
Whitefish, MT
Product: ADAR 5500, one-meter airborne imagery

AstroVision, Inc.
Stennis Space Center, MS
Product: High Temporal Resolution Geostationary Imagery

EarthWatch, Inc.
Longmont, CO
Product: Star-3I, three-meter airborne SAR imagery

Space Imaging EOSAT
Thornton, CO
Product: IKONOS Original, Master, Model one-meter spaceborne imagery

Further information about these products and awards is available on the Internet at URL:

http://procurement.nasa.gov/EPS/SSC/award.html

-end-

Video Advisory

National Aeronautics and
Space Administration
Washington, DC 20546
(202) 358-1600

For Release

Ray Castillo
Headquarters, Washington, DC
(Phone: 202/358-4555)

August 10, 1998

VIDEO ADVISORY: V98-88

MARS GLOBAL SURVEYOR: IMAGES AND ISSUES

Today's video file provides new images of Mars taken by NASA's Mars Global Surveyor (MGS) spacecraft. NASA managers are concerned about a damper mechanism on the MGS high gain antenna. A potential problem with the mechanism may force them to delay fully deploying the antenna. MGS can still gather and transmit data, but it will have to turn toward Earth to do so. MGS mission animation illustrates the fully deployed antenna.

ITEM 1: DUST DEVILS ON MARS
Image captured by the Mars Global Surveyor shows two dark lines that are the result of dust devils on Mars.

ITEM 1a: FUTURE LANDING SITE
Image taken by MGS shows the Gusev Crater, which has been identified as one of two possible landing sites for future robotic missions.

ITEM 1b: NEW CANYON DETAILS
Image taken during a fly-over scanning the south-facing slope of the Vallis Marineris canyon on Mars shows new details never seen before.

ITEM 1c: MGS ANIMATION
Animation of Global Surveyor flight around Mars.

ITEM 1d: SPIN TEST
B-roll of the Mars Global Surveyor reflective panel assembly and spin test.

ITEM 1e: MGS LAUNCH
B-roll showing the Delta II launch of MGS at Cape Canaveral on November 17, 1996.

For more information contact Diane Ainsworth (818) 354-0850 or Doug Isbell (202) 358-1753.

ITEM 2: GLENN GETS FITTED (REPLAY)

Video news file at noon, 3, 6, 9 p.m. and midnight EDT.
NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Douglas Isbell
Headquarters, Washington, DC
(Phone: 202/358-1547)

August 10, 1998

Diane Ainsworth
Jet Propulsion Laboratory, Pasadena, CA
(Phone: 818/354-5011)

RELEASE: 98-146

NASA MANAGERS CONSIDER POSTPONING DEPLOYMENT OF MARS GLOBAL SURVEYOR ANTENNA

Concern over the deployment mechanism for the high-gain communication antenna on the Mars Global Surveyor spacecraft has caused NASA managers to consider postponing the antenna's deployment in order to maximize the probability of mission success.

The project team is studying a postponement of up to nine months in the antenna deployment, which currently is scheduled to take place in March 1999. The spacecraft, now in orbit around Mars, uses the undeployed high-gain antenna to communicate with Earth, but the entire spacecraft must be turned to point the antenna toward Earth during each communication session.

"We have not made any decisions yet, but we want to take a conservative approach in order to protect the mission as fully as possible," said Glenn E. Cunningham, Mars Global Surveyor project manager at NASA's Jet Propulsion Laboratory (JPL), Pasadena, CA. "A delay in the antenna deployment would reduce the flow of imagery and science data somewhat, but we have some ideas about how to compensate for that."

Launched in November 1996 and in Mars orbit since September 1997, Mars Global Surveyor carries a dish-shaped high-gain antenna that is to be deployed on a 6.6-foot-long (two-meter) boom for the global mapping portion of the mission. The antenna is stowed during launch and the early orbital phase at Mars so that it is not contaminated by the exhaust plume from the spacecraft's main engine. The mission plan calls for the antenna boom to be deployed following the final use of the main engine next spring, at the completion of the spacecraft's orbit-shaping aerobraking activity.

During deployment, the boom is pushed outward by a powerful spring. A damper mechanism cushions the force of the spring and limits the speed of the deployment, somewhat like an automobile shock absorber or the piston-like automatic closer on a screen door. In recent months, however, engineers have become aware of problems with similar damper devices on deployable structures such as solar panels on other spacecraft.

-more-

New data suggest that, in the vacuum of space, air bubbles may develop in the viscous fluid inside the damper. This may allow the boom to move through a considerable range of motion at a high speed before any cushioning effect begins to occur.

"To the best of our knowledge, we could deploy the antenna boom without any adverse effect," said Cunningham. "However, the forces that the damper and boom would be subjected to as a result of the bubble formation are close enough to the maximum force that they are designed to withstand that we want to take a cautious approach in evaluating the deployment." In a worst-case scenario, damage resulting from damper failure could render the spacecraft unable to communicate with Earth.

"The advantage of deploying the high-gain antenna is that we can then use its gimbals to point the antenna at Earth to send data at the same time science instruments are pointed at Mars acquiring science data," said Cunningham. "Until we deploy the antenna, we must store data on the spacecraft's onboard recorder and then turn the entire spacecraft periodically to transmit data to Earth." A similar approach was used on NASA's Magellan spacecraft, which orbited Venus from 1990 to 1994.

The project team is considering postponing the antenna deployment until after the landing of another spacecraft, the Mars Polar Lander, which will reach Mars in December 1999. Mars Polar Lander carries an experiment called the Deep Space 2 microprobes, which will penetrate the soil of Mars in search of subsurface water. Deep Space 2 relies on Global Surveyor as its only possible communication link with Earth. If the high-gain antenna remains undeployed when Mars Global Surveyor begins its prime mapping mission next March, Cunningham said that small gaps would exist in coverage of the Martian surface by the spacecraft's camera and other instruments, due to the periods when the spacecraft is turned to communicate with Earth. Those gaps could be filled in later in the orbital mission.

The project team is not yet certain how a postponed deployment would affect the total amount of data returned by the spacecraft. An initial estimate for the first 30 days of the global mapping mission found that it could return approximately 40 percent of the data that could be sent with a fully articulated antenna. However, the data return rate could be improved by strategies such as using larger ground antennas on Earth so that the spacecraft could transmit data more quickly, Cunningham noted. A final decision on the antenna deployment will not be made until a review scheduled for Feb. 3, 1999, before the spacecraft's prime mapping mission begins the following month. Mars Global Surveyor is managed for NASA's Office of Space Science by JPL, a division of the California Institute of Technology. The spacecraft was built by Lockheed Martin Astronautics, Denver, CO.

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

David E. Steitz
Headquarters, Washington, DC
(Phone: 202/358-1730)

August 12, 1998

Tim Tyson
Marshall Space Flight Center, Huntsville, AL
(Phone: 205/544-0034)

RELEASE: 98-147

HIGH-ALTITUDE HURRICANE STUDY COULD SAVE LIVES AND MONEY

With an aim to better understand and improve ground-based predictions of hurricanes, two specially equipped NASA aircraft soon will take to the skies -- collecting high-altitude information about Atlantic hurricanes and tropical storms.

The Convection and Moisture Experiment (CAMEX) mission is scheduled for August and September. Results from the mission may increase warning time -- saving lives and property -- and decrease the size of evacuation areas -- saving money -- while giving scientists a better understanding of these dramatic weather phenomena. CAMEX will yield high-resolution spatial and temperature information on hurricane structure, dynamics and motion, leading to improved hurricane prediction. Results also will be used to validate existing measurements from the Tropical Rainfall Measuring Mission of hurricanes and tropical storms and to develop algorithms for future Earth science missions.

Led by the Atmospheric Dynamics and Remote Sensing program at NASA Headquarters, Washington, DC, the experiment unites eight NASA centers, other government weather researchers and the university community for a coordinated, multi-agency and -university Atlantic hurricane and tropical storm study.

"We only know what goes on in the bottom half of a hurricane -- from sea level to 27,000 feet," said Robbie Hood of the Global Hydrology and Climate Center at NASA's Marshall Space Flight Center, Huntsville, AL. "With all of the agencies and the university community working together, we now can learn about these storms from top to bottom -- and hopefully improve hurricane prediction."

When a hurricane or tropical storm erupts in the Atlantic, a NASA Dryden Flight Research Center DC-8 -- equipped with instruments to measure the storm's structure, environment and changes in intensity and tracking -- will fly into the storm at 35,000-40,000 feet.

-more-

At the same time, a specially equipped Dryden ER-2 -- a high-altitude research plane -- will soar above the storm at 65,000 feet. The high-flying plane will measure the storm's structure and the surrounding atmosphere that steers the storm's movement.

On the ground, the storm research team will launch weather balloons and monitor land-based sensors to validate the high-altitude measurements taken by instruments aboard the planes.

Hood and her team plan to fly the NASA planes in conjunction with scheduled storm flights of the National Oceanic and Atmospheric Administration (NOAA) that will take off from MacDill Air Force Base, Tampa, FL, and the "Hurricane Hunters" -- the U.S. Air Force's 53rd Weather Reconnaissance Squadron from Keesler Air Force Base, MS.

The Air Force's Hurricane Hunters and NOAA routinely fly into tropical storms and hurricanes to determine the location, motion, strength and size of the storm. The information that the two organizations gather is used to predict the potential strength and size of the storm as well as landfall.

In addition to providing Doppler radars on each research plane, NASA for the first time will bring state-of-the-art airborne instruments to measure moisture and wind fields around the hurricanes under observation.

NOAA flies a WP-3 "Orion" -- a four engine turboprop plane -- into storms at altitudes below 27,000 feet. And the Hurricane Hunters fly a WC-130 "Hercules" -- a four-engine turboprop aircraft -- at 5,000-10,000 feet.

"We will analyze the high-altitude storm information within the context of more traditional low-level aircraft observations, and satellite and ground-based radar observations," said Hood. "This new information should provide insight to hurricane modelers -- forecasters who continually strive to improve hurricane predictions."

Scientific instruments provided by Marshall to be flown on the Dryden aircraft will be augmented by instruments from NASA's Goddard Space Flight Center, Greenbelt, MD; Jet Propulsion Laboratory, Pasadena, CA; Langley Research Center, Hampton, VA; and Ames Research Center, Moffett Field, CA.

The hurricane study is part of NASA's Earth Science enterprise to better understand the total Earth system and the effects of natural and human-induced changes on the global environment.

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Don Savage
Headquarters, Washington, DC
(Phone: 202/358-1727)

August 11, 1998

William Steigerwald
Goddard Space Flight Center, Greenbelt, MD
(Phone: 301/286-5017)

Franco Bonacina
European Space Agency Headquarters, Paris, France
(Phone: 33-1-5369-7713)

RELEASE: 98-149

NEW INFORMATION FROM SOHO INCREASES CHANCES FOR RECOVERY

The dormant Solar and Heliospheric Observatory (SOHO) spacecraft has sent temperature and electrical data to ground controllers, information which could help in the satellite's recovery. The SOHO Recovery Team is working to recharge the spacecraft's batteries, which in turn will allow the team to assess the spacecraft's overall health and condition of the scientific instruments.

The SOHO data was received Aug. 8, six days after the spacecraft's first signal since the end of June, at NASA's Goddard Space Flight Center, Greenbelt, MD.

"This is the best news I've heard since we lost contact with SOHO," said Roger Bonnet, Director of Science for the European Space Agency (ESA), NASA's partner in the mission. "I never gave up hope of some recovery of this fantastic mission. We should just hope that the damage sustained by SOHO's enforced period of deep freeze does not affect the scientific payload too much."

Following analysis of the expected onboard conditions by engineers from ESA and Matra Marconi Space, the spacecraft's builders, commands were sent through the NASA Deep Space Network station at Goldstone, CA. These sequences were designed to divert the available solar array power into a partial charging of one of the onboard batteries.

After 10 hours of charging, the telemetry was commanded on and seven full sets of data about the onboard status were received, including information on temperatures and voltages for payload instruments. After one minute, ground controllers switched off the telemetry to preserve onboard resources.

- more -

Because of the spacecraft's orientation, some temperatures are colder than normal, and some are hotter than normal, as expected. The instruments' condition will not be known with certainty until attempts are made to activate them at the end of the recovery sequence. The hydrazine fuel is likely to be partially frozen.

Data on voltages and currents in individual units indicated one of the two batteries on board the spacecraft is almost fully charged. Attempts to recharge the second battery are underway.

With the battery-charging technique proven successful, the team has requested a full 24-hour coverage of SOHO to attempt a more complete charging. The Deep Space Network has accepted this request on an emergency basis and will give it priority over other scheduled network activities.

"I am truly satisfied with the information the data we acquired gives us," said ESA's Francis Vanderbussche, who is in charge of the SOHO Recovery Team at Goddard. "Conditions onboard are as good as we expected them to be."

The team is working on the next series of procedures, which will try to thaw the onboard hydrazine fuel, currently at zero degrees Celsius. Thawing the fuel will allow controllers to re-establish control of the spacecraft. The thawing will be attempted later this week after both batteries are fully charged.

The delicate recovery activities are being directed by the ESA SOHO project team from the NASA Operation Center at Goddard.

SOHO completed its nominal two year mission in April 1998. The spacecraft has already achieved spectacular results concerning the dynamics of the solar interior and has given a comprehensive view of the solar corona. Its mission had recently been extended to 2003 to cover the upcoming period of maximum solar activity expected to peak in 2001.

More information on SOHO, including mission status reports, is available on the Internet at the new ESA science website at:

http://sohowww.nascom.nasa.gov/
or at:
http://sci.esa.int

-end-

Video Advisory

National Aeronautics and
Space Administration
Washington, DC 20546
(202) 358-1600

For Release

Ray Castillo
Headquarters, Washington, DC
(Phone: 202/358-4555)

August 12, 1998

VIDEO ADVISORY: V98-90

NASA STUDY MAY HELP PREDICT HURRICANE PATH

Today's video file provides animation and footage that illustrates how NASA research could soon make it easier predict the path hurricanes will take. This research is designed to improve our ability to predict when hurricanes will hit land, increasing warning time and decreasing the area of evacuation.

ITEM 1: **CYCLONE SUSAN** (animation)
ITEM 1a: **HOUSTON STORM TRMM FLY-OVER** (animation)
ITEM 1b: **TRMM ANIMATION**
ITEM 1c: **HURRICANE LINDA** (3-D fly around)
ITEM 1d: **HURRICANE FRAN** (GOES image)
ITEM 1e: **TYPHOONS IVAN AND JOAN** (GOES image)
ITEM 1f: **TYPHOON PAKA** (GOES image)
ITEM 1g: **WATER VAPOR** (time lapse)
ITEM 1h: **IMMERSIVE HURRICANE WORK BENCH**
ITEM 1i: **HURRICANE MODEL**
ITEM 1j: **INTERVIEW - MARSHALL SHEPARD, Research Meteorologist**
For more information contact Wade Sisler at (301) 256-6256.

ITEM 2: **CYCLONE TRACKING**
For more information contact Kirsten Williams at (805) 942-2366
ITEM 2a: **INTERVIEW - DR. RAMESH, Earth Science Program Manager**
For more information contact David Steitz at (202) 358-1730.
ITEM 2b: **INTERVIEW - ROBBIE HOOD, Mission Scientist, CAMEX-3 Experiment**
For more information contact Tim Tyson at (256) 544-0994.
ITEM 2c: **INTERVIEW - DR. EDWARD BROWELL, Principal Investigator, LASE Project**
For more information contact Cathy Watson at (757) 864-6122.

NASA Television is available on GE-2, transponder 9C at 85 degrees West longitude, with vertical polarization. Frequency is on 3880.0 megahertz, with audio on 6.8 megahertz.

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Brian Welch
Headquarters, Washington, DC
(Phone: 202/358-1600)

August 12, 1998

Bruce Buckingham
Kennedy Space Center, FL
(Phone: 407/867-2468)

Eileen Hawley
Johnson Space Center, Houston, TX
(Phone: 281/483-5111)

RELEASE: 98-150

MEDIA REMINDER -- GUIDELINES FOR STS-95 COVERAGE

As the launch of Discovery on the STS-95 mission approaches, news media planning to cover the flight are encouraged to make logistical arrangements as early as possible. Heavy media interest in the mission will challenge the resources of NASA's Kennedy Space Center in Florida and Johnson Space Center in Houston.

Each center will have a limited amount of working space and phone and power capability available to accredited media, which may result in some restrictions on the number of media representatives who can be supported. To assist in NASA's pre-mission planning, media intending to cover the mission should request accreditation and logistical support no later than close of business Aug. 14, 1998.

The following contact information is provided to guide media through the accreditation process.

Accreditation Requests: Requests for accreditation for launch at the Kennedy Space Center, FL, should be faxed to the Kennedy newsroom at 407/867-2692, attention: Selina Scorah. Requests should include the names of the media representatives attending, social security or passport number, and date of birth, and must be on official letterhead of the sponsoring organization. Badges issued by Kennedy for launch will be honored for mission coverage at the Johnson Space Center and a separate request does not have to be sent to Johnson.

-more-

Media planning to cover the mission from Johnson, without first being accredited by Kennedy, should submit a faxed accreditation request to the Johnson newsroom at 281/483-2000, attention: Laura Rochon. Requests should include the names of the media representatives attending, social security or passport number, and date of birth, and must be on official letterhead of the sponsoring organization.

Audiovisual and Television Logistics: For assistance in requesting documentation of crew training, or other audio and video products, as well as making arrangements for television or audio support for coverage of the mission, media should contact:

Kennedy: Bill Johnson at the press site at 407/867-2468 or 7819.

Johnson: Carlos Fontanot, through the newsroom at 281/483-5111.

Telephones and Workspace: Workspace and telephone and electrical connections may be limited. For logistical support contact:

Kennedy: Lisa Fowler at the press site at 407/867-2468. Workspace reservations as well as guidelines and instructions for obtaining and activating phone lines will be provided to accredited media, but media must contact BellSouth directly to install and activate the phone lines.

Johnson: Laura Rochon, through the newsroom at 281/483-5111. Workspace reservations as well as guidelines and instructions for obtaining and activating phone lines will be provided to accredited media, but media must contact Southwestern Bell directly to install and activate the phone lines.

Mission Information and Inquiries: For general information on mission coverage and background information on the crew and mission objectives, contact the NASA newsrooms at the numbers listed above. An advance look at the STS-95 mission is available on the internet at URL: http://www.shuttle.nasa. gov

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Brian Welch
Headquarters, Washington, DC
(Phone: 202/358-1600)

August 18, 1998

NOTE TO EDITORS: N98-52

NASA NEWSROOM TO REPLACE NEWS-RELEASE FAXES WITH ELECTRONIC MAIL DISTRIBUTION

The NASA Headquarters Newsroom plans to cease faxing news releases and other advisories to the media after Dec. 31, 1998. Fax distribution will be replaced by the electronically distributed NASA Daily News Summary, which the Newsroom began producing Aug. 10.

Members of the media are invited to subscribe to the automated e-mail distribution list by sending a request to:

brian.dunbar@hq.nasa.gov

Requests will be handled more efficiently if the phrase "subscribe media list" is included in the subject line of the message. Requestors may be asked to provide proof of their media affiliations, such as a request faxed on company letterhead.

The shift away from faxes, which can take up to five hours to distribute news releases, is designed to provide reporters and editors with a single document, distributed at approximately the same time each day, that will help them plan their overall coverage of NASA-related stories. Unlike faxed material, the electronic summary will be sent directly to interested reporters and editors, not to a centrally located machine where material may get lost.

The news summary contains brief synopses of each day's news releases and upcoming televised events, including the NASA Video File. Relevant Internet addresses are also included. The summary is issued electronically at approximately
2 p.m. Eastern time on business days when there are news releases, new Video

- more -

File material or upcoming live events. Examples of the summary can be seen in the 1998 News Release Index:

http://www.nasa.gov/releases/1998/index.html

The Newsroom will continue to send individual releases by e-mail to reporters and members of the public through the existing press release listserv. Interested reporters can subscribe directly to that list through:

http://www.nasa.gov/releases/

- end -

Contract Announcement

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Dwayne Brown
Headquarters, Washington, DC
(Phone: 202/358-1726)

August 21, 1998

Lisa Malone
Kennedy Space Center, FL
(Phone: 407/867-2468)

RELEASE: C98-m

SGS AWARDED NASA AND AIR FORCE JOINT BASE CONTRACT

NASA's Kennedy Space Center, FL, Director Roy Bridges today announced Space Gateway Support (SGS) of Herndon, VA, has been selected for award of a government contract to perform base operations for Kennedy and the 45th Space Wing, which includes Cape Canaveral Air Station and Patrick Air Force Base. SGS is a joint venture of Northrop Grumman Technical Services, Herndon, VA; ICF Kaiser Defense Programs, Inc., Fairfax, VA; and Wackenhut Services, Inc., Palm Beach Gardens, FL.

In an unprecedented display of cooperation, two government agencies will combine resources and requirements to cut expenses, reinvest savings and consolidate functions with the objective of remaining competitive in a global launch market.

"Under this single-contract acquisition approach for base support operations, we will have a great potential to increase savings and enhance customer support and performance," said Bridges. "This new acquisition approach will save the government a substantial sum over the 10 years of the contract if all options are exercised."

The cost-plus award fee contract features a five-year basic performance period, beginning Oct. 1, 1998, and an option for a five-year extension. The potential value of the contract, called the Joint Base Operations Support Contract (J-BOSC), exceeds $2 billion over 10 years. SGS will perform work that is being performed by Kennedy's Base Operations contractor, EG&G Florida, and the 45th Space Wing's Launch Base Support contractor, Johnson Controls, and 16 other individual base-support contracts.

- more -

Other primary J-BOSC customers are government contractors for NASA and Air Force space flight operations, payload ground operations, life sciences, expendable vehicles, launch operations and support, and elements of the Navy and the Department of the Interior. J-BOSC also will serve commercial customers such as The Boeing Company, Lockheed-Martin, Orbital Sciences Corp., Astrotech (SPACEHAB) and Spaceport Florida Authority.

Types of work covered under the J-BOSC are: project management; public works including engineering services and infrastructure; base support services such as protective services, fire protection, logistics, information technology , administrative, medical and environmental services; and installation improvement.

The Joint Performance Management Office , a new organization staffed with a mixture of NASA and Air Force employees, will manage the J-BOSC contract. The Executive Director of the office will report to a Board of Directors. The board's chair and vice chair will rotate every two years between the Kennedy director and 45th Space Wing commander.

"The management approach for this contract is significantly improved over what we currently do," Bridges said. "We have a very lean insight concept which emphasizes the performance-based nature of the contract."

- end -

News Release

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

Elvia Thompson
Headquarters, Washington, DC
(Phone: 202/358-1696)

For Release
August 26, 1998

RELEASE: 98-152

NASA ANNOUNCES RESEARCH GRANTS IN MICROGRAVITY COMBUSTION SCIENCE

NASA has selected 49 researchers to receive grants totaling approximately $20,000,000 to conduct microgravity combustion research. Forty-one of the grants are to conduct ground-based research, while the remaining eight are flight definition efforts. Eighteen of these grants are for continuation of work being funded by NASA, but most (31) represent new research efforts.

The investigators will have NASA's microgravity research facilities such as drop-tubes, drop-towers, aircraft flying parabolic trajectories, and sounding rockets at their disposal. The flight-definition investigators will work toward experiments on a space-flight test bed. Sponsored by NASA's Office of Life and Microgravity Science and Applications, this research offers investigators the opportunity to take advantage of a low-gravity environment to improve understanding of fundamental physical and chemical processes associated with combustion.

NASA received 155 responses to its research announcement. These proposals were all peer-reviewed by scientific and technical experts from academia, government and industry. In addition, those proposals selected for flight definition were reviewed in terms of engineering feasibility by a team from NASA's Lewis Research Center, Cleveland, OH. A list of awardees (by state), their institutions, and research titles can be found on the Internet at:

ftp://ftp.hq.nasa.gov/pub/pao/pressrel/1998/98-152a.txt

- end -

News Release

National Aeronautics and
Space Administration
Washington, DC 20546
(202) 358-1600

For Release

August 27, 1998

Don Savage
Headquarters, Washington, DC
(Phone: 202/358-1547)

Bill Steigerwald
Goddard Space Flight Center, Greenbelt, MD
(Phone: 301/286-5017)

Ray Villard
Space Telescope Science Institute, Baltimore, MD
(Phone: 410/338-4514)

RELEASE: 98-153

FAR-FLUNG GALAXY CLUSTERS MAY REVEAL FATE OF UNIVERSE

A survey of galaxy clusters by NASA's Hubble Space Telescope has found what could be some of the most distant clusters ever seen. If the distances and masses of the clusters are confirmed by ground-based telescopes, the survey may hold clues to how galaxies quickly formed into massive large-scale structures after the Big Bang, and what that may mean for the eventual fate of the universe.

According to theoretical models, if the clusters turn out to be massive and very distant, it could imply that the cosmos does not contain enough matter for gravity to stop the expansion of the universe. These models predict that such a low-density universe would have built most of its galaxy clusters long ago.

About 10 to 20 of the farthest clusters in the Hubble survey may be over seven billion light years away, which means that the clusters, and their populations of tens or perhaps hundreds of galaxies each, were fully assembled early in the history of the universe.

Present distance estimates are based on the colors of the galaxies in each cluster. The redder the overall cluster appears, the more distant it is, an assumption based on the apparent reddening of light -- known as red shift -- as stars and galaxies move away from us at high speeds. The distances can be more accurately measured using a spectrograph attached to a ground-based telescope.

The Hubble survey contains 92 new clusters uncovered during a six-year sky survey known as the Medium Deep Survey, led by a team of astronomers now at Carnegie Mellon University, Pittsburgh, PA.

- more -

The project has been led by Professor Richard Griffiths and senior scientist Dr. Kavan Ratnatunga. The catalog samples an area of the sky that is small, but scattered over 300 random directions.

The clusters were found using an automated procedure developed by the Carnegie Mellon team. They first identified large elliptical galaxies in random fields taken by Hubble. Next, an automated procedure was used to search statistically for an over-abundance of galaxies around the large elliptical galaxies. The assumption is that the excess galaxies all belong to the same cluster. This procedure helped to discriminate clusters against the field galaxy population which is smoothly distributed across the sky

Major new telescopes must be used to study these clusters to measure their distances.

The whole HST catalog of galaxies can be searched on the web at:

http://astro.phys.cmu.edu/mds/

The Hubble observations will be published in the Astronomical Journal. The research team members are: E. J. Ostrander; K. U. Ratnatunga; and R. E. Griffiths, Department of Physics, Carnegie Mellon University.

The Space Telescope Science Institute is operated by the Association of Universities for Research in Astronomy, Inc. (AURA) for NASA, under contract with the Goddard Space Flight Center, Greenbelt, MD. The Hubble Space Telescope is a project of international cooperation between NASA and the European Space Agency (ESA).

- end -

EDITOR'S NOTE: Images from Hubble's Medium Deep Field catalog are available on the Internet at:

http://oposite.stsci.edu/latest

News Release

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

Michael Braukus
Headquarters, Washington, DC
(Phone: 202/358-1979)

For Release
August 27, 1998

Keith Henry
Langley Research Center, Hampton, VA
(Phone: 757/864-6120)

Kirsten Williams
Dryden Flight Research Center, Edwards, CA
(Phone: 805/258-2662)

Anthony Castrogiovanni
GASL, Inc., Ronkonkoma, NY
(Phone: 516/737-6100 x128)

Lowell Keel
MicroCraft, Inc., Tullahoma, TN
(Phone: 615/455-2617 x235)

RELEASE: 98-154

FIRST HYPERSONIC PROPULSION HARDWARE DELIVERED

A revolutionary new engine that ultimately may reduce the cost of putting payloads in orbit has been delivered to NASA for testing.

The 30-inch long "scramjet" engine was fabricated by GASL, Inc., Ronkonkoma, NY, for the Hyper-X program, an ambitious research effort to demonstrate hypersonic propulsion technologies in flight.

The engine is the first program hardware to be completed and will be used in high-speed ground tests at NASA's Langley Research Center, Hampton, VA.

An identical engine being fabricated now will be mated to its flight vehicle in February 1999 and delivered to NASA's Dryden Flight Research Center, Edwards, CA, leading to the first flight of the program in early 2000.

The contract for flight and ground hardware is implemented for NASA by a team led by MicroCraft, Tullahoma TN, and including Boeing, Seal Beach, CA, and Accurate Automation, Chattanooga, TN. A second contract, to Orbital Sciences Corp., Dulles, VA, will provide rockets to boost the research vehicles to test altitude.

-more-

Langley manages the five-year, approximately $170 million Hyper-X program, and Dryden is responsible for vehicle fabrication and flight tests.

Three flights are planned -- two at Mach 7 and one at Mach 10 (seven and ten times the speed of sound). The flight tests will be conducted within the Western Test Range off the coast of southern California. Each of three planned vehicles will be flown once.

Hyper-X vehicles, which have been designated X-43, will be boosted to their test point on the first stage of a modified Orbital Sciences Corp. Pegasus booster rocket and will be launched by NASA's B-52 from an altitude of 19,000 to 43,000 feet, depending upon the mission. For each flight, the booster will accelerate the X-43 to Mach 7 or 10 at altitudes up to 100,000 feet, where it will separate from the booster and fly under its own power. Mach 7 is approximately 5,000 mph at sea level. Mach 10 is approximately 7,200 mph at sea level.

Hyper-X program managers hope to demonstrate "air-breathing" engine technologies that could ultimately be applied in vehicle types from hypersonic (Mach 5 and above) aircraft to reusable space launchers. By comparison, the high-flying SR-71 reconnaissance airplane, which flies more than Mach 3, is the fastest air-breathing aircraft to date.

Although prior flight experiments conducted by the Russians using a rocket booster have demonstrated air-breathing engine operation at Mach 5 to 6 conditions, the X-43 will be the first free-flying demonstration of an airframe-integrated, air-breathing engine and will extend the flight range to Mach 10.

Extending air-breathing technologies to much greater speeds requires the development of scramjet engines, the type that will propel the research vehicles. Unlike a rocket, which must carry its own oxygen for combustion, an air-breathing aircraft burns oxygen in air scooped from the atmosphere. Air-breathing hypersonic vehicles therefore can be lighter and should carry more cargo/payload than equivalent rocket-powered systems.

A ramjet engine operates by subsonic combustion of fuel in a stream of air compressed by the forward speed of the aircraft itself, as opposed to a conventional jet engine, in which the fan blades of the compressor section compress the air. A scramjet (supersonic-combustion ramjet) is a ramjet engine in which the airflow through the entire engine remains supersonic (faster than Mach 1 or the speed of sound). The fuel for the X-43 will be hydrogen.

- end -

Images of the Hyper-X/X-43 vehicle and additional information can be obtained at the following URLs:

STILLS: http://lisar.larc.nasa.gov/LISAR/BROWSE/hyperx.html
ANIMATION: http://lava.larc.nasa.gov/BROWSE/hyperx.html
FACT SHEET: http://oea.larc.nasa.gov/PAIS/Hyper-X.html

News Release

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

For Release

August 27, 1998

Debra Rahn
Headquarters, Washington, DC
(Phone: 202/358-1638)

Doug Peterson
Johnson Space Center, Houston TX
(Phone: 281/483-5111)

RELEASE: 98-155

INTERNATIONAL CANDIDATES JOIN 1998 ASTRONAUT CLASS

A cadre of international astronaut candidates has arrived at NASA's Johnson Space Center, Houston, TX, to begin training as members of the 1998 Astronaut Class.

The international candidates, from Brazil, Canada, France, Germany and Italy, will train as mission specialists for future Space Shuttle and International Space Station flight assignments.

"The Class of 1998 continues our international cooperation in space as we begin assembly of the International Space Station," said David C. Leestma, director of Flight Crew Operations. "We welcome our international astronauts and the entire class. They have a lot of work and a very exciting time ahead of them."

The international candidates are: Léopold Eyharts, Paolo Nespoli, Hans Schlegel and Roberto Vittori, European Space Agency; Bjarni V. Tryggvason, Canadian Space Agency; and Marcos Pontes, Brazilian Space Agency.

For complete biographical information on the astronaut corps, including these international candidates, see the NASA Internet biography home page at URL:

http://www.jsc.nasa.gov/Bios/

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release
September 1, 1998

Donald Savage
Headquarters, Washington, DC,
(Phone: 202/358-1727)

Bill Steigerwald
Goddard Space Flight Center, Greenbelt, MD
(Phone: 301/286-5017)

Franco Bonacina
European Space Agency Headquarters, Paris, France
(Phone: 33-1-5369-7713)

NOTE TO EDITORS: N98-55

PRESS BRIEFING SET FOR SEPT. 3 ON SOHO INVESTIGATION BOARD REPORT AND SPACECRAFT RECOVERY OPERATIONS

NASA and the European Space Agency (ESA) will hold a press conference September 3 to provide the latest information on the recovery of the agencies' Solar and Heliospheric Observatory (SOHO). Panel members also will discuss the final report of the board investigating the mishap that led to loss of communications with SOHO on June 24.

The press briefing will begin at 10 a.m. EDT and will consist of two panels: one at ESA Headquarters in Paris and the other at the NASA Headquarters auditorium, 300 E St. SW, Washington, DC. An audio link will allow questions and answers between Paris, NASA Headquarters and participating NASA centers. Listen-only audio will be available for media representatives by calling 407/867-1220.

The panelists in Paris will be Dr. Roger Bonnet, ESA's Director of Science, and Professor Massimo Trella, ESA Inspector General and co-chairman of the ESA/NASA investigation board.

The panelists at NASA Headquarters will be Dr. Michael Greenfield, Deputy Associate Administrator for the Office of Safety and Mission Assurance and investigation board co-chairman; Dr. Joe Gurman, U.S. Project Scientist for SOHO, Goddard Space Flight Center, Greenbelt, MD; Francis Vandenbussche, ESA head of the SOHO recovery team at Goddard; and Dr. George Withbroe, Science Director, Sun-Earth Connection Theme, NASA Headquarters.

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

David E. Steitz
Headquarters, Washington, DC
(Phone: 202/358-1730)

September 1, 1998

Allen Kenitzer
Goddard Space Flight Center, Greenbelt, MD
(Phone: 301/286-2806)

RELEASE: 98-156

SCIENTISTS OBSERVE TALL CHIMNEY CLOUD IN HURRICANE BONNIE

NASA researchers have obtained compelling images from Hurricane Bonnie showing a storm cloud towering like a mountain, 59,000 feet into the sky from the eye wall. These images were obtained on Saturday, Aug. 22, 1998, by the world's first spaceborne rain radar aboard the Tropical Rainfall Measuring Mission (TRMM), a joint U.S.-Japanese mission. Launched last fall, the TRMM spacecraft continues to provide exciting new insight into cloud systems over tropical oceans.

By comparison, the highest mountain in the world, Mt. Everest, is 29,000 feet and the average commercial jet flies at barely one-half the height of Bonnie's cloud tops.

"It looks like a skyscraper in the clouds," said Dr. Christian Kummerow, TRMM Project Scientist at NASA's Goddard Space Flight Center, Greenbelt, MD. "This is the first time that TRMM's precipitation radar has seen a structure of this type in a hurricane approaching the U.S. East coast."

"Clouds this tall are rarely observed in the core of Atlantic hurricanes," said Dr. Bob Simpson, former Director of the National Hurricane Center in Miami and the National Hurricane Research Project. "This huge cloud probably happened because, at the time the data was collected, Bonnie was moving very slowly. The lack of movement kept funneling warm moist air into the upper atmosphere, thus raising the entire height of the tropopause, which is normally at around 45-52,000 feet. The tropopause marks the upper limits of Earth's densest layer of atmosphere.

"The vast amount of warm, moist air being raised high into the atmosphere, and the subsequent release of latent energy as this tropical airmass condensed into rain drops, is thought to be the precursor of hurricane intensification, which was observed in Bonnie in the 24 to 48 hours after these data were collected," Simpson said.

-more-

Many scientists believe that towering cloud structures, such as the one observed by TRMM, are probably a precursor to hurricane intensification. This was the situation with Hurricane Bonnie, whose central pressure dropped from 977 millibars to 957 millibars in the subsequent 24 hours. Lower air pressure is associated with higher wind speeds and overall storm strengthening.

"TRMM has flown over 100 tropical cyclones since its launch in November of 1997," said Kummerow. "This enormously enhances our database of cloud structures within tropical storms during their growth and decay phases. It also greatly improves the more restricted observations we have obtained from aircraft radar and allows for the systematic study of this hurricane behavior which appears to precede their intensification."

As the height of the hurricane season approaches, TRMM scientists are looking forward to the continuing analysis of Atlantic hurricanes.

TRMM was launched November 27, 1997, from the Japanese Space Center, Tanegashima, Japan, and is a joint United States and Japanese mission, the first dedicated to measuring tropical and subtropical rainfall through microwave and visible infrared sensors, including the first spaceborne rain radar.

The TRMM spacecraft fills an enormous void in the ability to measure world-wide precipitation because so little of the planet is covered by ground-based radars. Presently, only two percent of the area covered by TRMM is covered by ground-based radars or surface rain gauges. By studying rainfall regionally and globally, and the difference in ocean and land-based storms, TRMM is providing scientists the most detailed information to date on the processes of these powerful storms, leading to new insights on how they affect global climate patterns.

The TRMM mission is part of NASA's Earth Science Enterprise, a long-term, coordinated research effort to study the total Earth system and the effects of natural and human-induced changes on the global environment.

More information about the TRMM project is available at:

http://trmm.gsfc.nasa.gov

-end-

News Release

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

Ray Castillo
Headquarters, Washington, DC
(Phone: 202/358-4555)

For Release

September 1, 1998

RELEASE: 98-157

LADWIG, HEFFERNAN AND GARVER NAMED TO KEY NASA ROLES

NASA Administrator Daniel S. Goldin has named Alan Ladwig Senior Advisor to the NASA Administrator, Edward Heffernan Associate Administrator for Legislative Affairs, and Lori Garver Acting Associate Administrator for Policy and Plans. Heffernan's appointment became official on Aug. 14, 1998, Ladwig's and Garver's on Aug. 28, 1998.

As Senior Advisor, Ladwig will serve as the primary catalyst for planning and communication of long-range initiatives. He also will continue to represent the Agency for media activities and public presentations and to coordinate Agency planning to commemorate NASA's 40th anniversary.

"I have asked Alan to apply innovative techniques and develop new initiatives to advance America as a leader of spacefaring nations," Goldin said. "He also will focus on new methods of communication to ensure that the American taxpayers continue to have easy access to information on the outcomes and value of their investment in NASA."

Ladwig has served as the Associate Administrator for the Office of Policy and Plans, which oversees coordination of NASA policies and long-range plans, the NASA Strategic Management System, the NASA Advisory Council, and the History Division.

Prior to his current appointment at NASA, Ladwig was Senior Policy Analyst for Science Applications International Corporation (SAIC). He first served at NASA from 1981 through 1989 in a variety of management positions. He was the Director of Special Projects for the Office of Exploration. In 1986, he served on the Administrator's Long Range Planning Task Force that produced the report *LEADERSHIP AND AMERICA'S FUTURE IN SPACE*. Ladwig was Manager of the Space Flight Participant Program, the Shuttle's Middeck Experiments Program, and the Shuttle Student Involvement Program. He also served as Executive Officer in the Office of Space Flight.

-more-

He received the NASA Exceptional Achievement Medal and two NASA Exceptional Service Medals. Ladwig served in the US Army from 1972-1974 and was stationed in Athens, Greece. He attended Southern Illinois University where he received a MS in Higher Education and a BS in Speech. He and his wife Debra reside in Falls Church, Virginia.

Edward Heffernan has served as Acting Associate Administrator for Legislative Affairs since September 1997. In addition to his legislative role, he is the White House Liaison at NASA and serves as the primary coordinator of activities and management issues involving the Offices of the President and Vice President and the Office of Science and Technology Policy.

Heffernan has served as Senior Policy Advisor for Intergovernmental Affairs in the Office of Policy and Plans at NASA Headquarters. He joined NASA in April 1994 as a legislative policy specialist for the Space Station Information Center. Prior to arriving at NASA, he was a consultant in Washington, DC.

Heffernan was the Democratic Nominee for the Eighth Congressional District of Maryland in 1992. From 1987 to 1992, he served as a legislative assistant to U.S. Congressman Richard J. Durbin (D-IL). Heffernan earned his BA degree in English in 1986 from Tulane University. He resides in Rockville, MD.

Lori Garver has served as a senior policy analyst for the Office of Policy and Plans since 1997. In this capacity, she served as the focal point for policy issues pertaining to the Commercial Guidelines section of the National Space Policy and developed a strategy to commercialize and privatize NASA functions. Garver joined NASA in 1996, serving as a Special Assistant for Communication to the NASA Administrator. Prior to joining NASA, Garver was the Executive Director of the National Space Society, serving as its primary spokesperson for nine years. She and her husband David Brandt reside in McLean, VA.

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Douglas Isbell
Headquarters, Washington, DC
(Phone: 202/358-1753)

September 3, 1998

David Morse
Ames Research Center, Moffett Field, CA
(Phone: 650/604-4724)

RELEASE: 98-158

LATEST LUNAR PROSPECTOR FINDINGS INDICATE LARGER AMOUNTS OF POLAR WATER ICE

The north and south poles of the Moon may contain up to six billion metric tons of water ice, a more than ten-fold increase over previous estimates, according to scientists working with data from NASA's Lunar Prospector mission.

Growing evidence now suggests that water ice deposits of relatively high concentration are trapped beneath the soil in the permanently shadowed craters of both lunar polar regions. The researchers believe that alternative explanations, such as concentrations of hydrogen from the solar wind, are unlikely.

Mission scientists also report the detection of strong, localized magnetic fields; delineation of new mass concentrations on the surface; and the mapping of the global distribution of major rock types, key resources and trace elements. In addition, there are strong suggestions that the Moon has a small, iron-rich core. The new findings are published in the Sept. 4 issue of *Science* magazine.

"The Apollo program gave us an excellent picture of the Moon's basic structure and its regional composition, along with some hints about its origin and evolution," said Dr. Carl Pilcher, science director for Solar System exploration in NASA's Office of Space Science, Washington, DC. "Lunar Prospector is now expanding that knowledge into a global perspective. The indications of water ice at the poles are tantalizing and likely to spark spirited debate among lunar scientists."

In March, mission scientists reported a water signal with a minimum abundance of one percent by weight of water ice in rocky lunar soil (regolith) corresponding to an estimated total of 300 million metric tons of ice at the Moon's poles. "We based those earlier, conscientiously conservative estimates on graphs of neutron spectrometer data, which showed distinctive dips over the lunar polar regions," said Dr. Alan Binder of the Lunar

-more-

Research Institute, Gilroy, CA, the Lunar Prospector principal investigator. "This indicated significant hydrogen enrichment, a telltale signature of the presence of water ice.

"Subsequent analysis, combined with improved lunar models, shows conclusively that there is hydrogen at the Moon's poles," Binder said. "Though other explanations are possible, we interpret the data to mean that significant quantities of water ice are located in permanently shadowed craters in both lunar polar regions.

"The data do not tell us definitively the form of the water ice," Binder added. "However, if the main source is cometary impacts, as most scientists believe, our expectation is that we have areas at both poles with layers of near-pure water ice." In fact, the new analysis "indicates the presence of discrete, confined, near-pure water ice deposits buried beneath as much as 18 inches (40 centimeters) of dry regolith, with the water signature being 15 percent stronger at the Moon's north pole than at the south."

How much water do scientists believe they have found? "It is difficult to develop a numerical estimate," said Dr. William Feldman, co-investigator and spectrometer specialist at the Department of Energy's Los Alamos National Laboratory, NM. "However, we calculate that each polar region may contain as much as three billion metric tons of water ice."

Feldman noted he had cautioned that earlier estimates "could be off by a factor of ten," due to the inadequacy of existing lunar models. The new estimate is well within reason, he added, since it is still "one to two orders of magnitude less than the amount of water predicted as possibly delivered to, and retained on, the Moon by comets," according to earlier projections by Dr. Jim Arnold of the University of California at San Diego.

In other results, data from Lunar Prospector's gamma ray spectrometer have been used to develop the first global maps of the Moon's elemental composition. The maps delineate large compositional variations of thorium, potassium and iron over the lunar surface, providing insights into the Moon's crust as it was formed. The distribution of thorium and potassium on the Moon's near side supports the idea that some portion of materials rich in these trace elements was scattered over a large area as a result of ejection by asteroid and comet impacts.

While its magnetic field is relatively weak and not global in nature like those of most planets, the Moon does contain magnetized rocks on its upper surface, according to data from Lunar Prospector's magnetometer and electron reflectometer. The resultant strong, local magnetic fields create the two smallest known magnetospheres in the Solar System.

"The Moon was previously interpreted as just an unmagnetized body without a major effect on what is going on in the solar wind," explained Dr. Mario Acuna, a member of the team located at NASA's Goddard Space Flight Center, Greenbelt, MD. "We are discovering that there is nothing simple about the Moon as an obstacle to this continuous flow of electrically charged gas from the Sun."

These mini-magnetospheres are located diametrically opposite to large impact basins on the lunar surface, leading scientists to conclude that the magnetic regions formed as the result of these titanic impacts. One theory is that these impacts produced a cloud of electrically charged gas that expanded around the Moon in about five minutes, compressing and amplifying the pre-existing, primitive ambient magnetic field on the opposite side. This field was then "frozen" into the surface crust and retained as the Moon's then-molten core solidified and the global field vanished.

Using data from Prospector's doppler gravity experiment, scientists have developed the first precise gravity map of the entire lunar surface. In the process, they have discovered seven previously unknown mass concentrations, lava-filled craters on the lunar surface known to cause gravitational anomalies. Three are located on the Moon's near side and four on its far side. This new, high-quality information will help engineers determine the long-term, altitude-related behavior of lunar-orbiting spacecraft, and more accurately assess fuel needs for possible future Moon missions.

Finally, Lunar Prospector data suggests that the Moon has a small, iron-rich core approximately 186 miles (300 kilometers) in radius, which is toward the smaller end of the range predicted by most current theories. "This theory seems to best fit the available data and models, but it is not a unique fit," cautioned Binder. "We will be able to say much more about this when we get magnetic data related to core size later in the mission." Ultimately, a precise figure for the core size will help constrain models of how the Moon originally formed.

Lunar Prospector was launched on Jan. 6, 1998, aboard a Lockheed Martin Athena 2 solid-fuel rocket and entered lunar orbit on Jan. 11. After a one-year primary mission orbiting the Moon at a height of approximately 63 miles (100 kilometers), mission controllers plan to the lower the spacecraft's orbit substantially to obtain detailed measurements. The $63 million mission is managed by NASA's Ames Research Center, Moffett Field, CA.

Further information about Lunar Prospector, its science data return, and relevant charts and graphics can be found on the project website at:

http://lunar.arc.nasa.gov

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Sarah Keegan
Headquarters, Washington, DC
(Phone: 202/358-1902)

September 4, 1998

RELEASE : c98-n

NASA CONTRACTS FOR FUTURE SPACE TRANSPORTATION STUDIES

NASA has selected five companies to perform space transportation architecture studies. These studies will develop approaches to meet the agency's future human space flight requirements with significant reductions in cost.

The industry-led studies will provide information to support future policy decisions determining if the Space Shuttle system should be replaced: if so, when; if not, what upgrade strategy is required to continue safe and affordable Space Shuttle flight.

The companies selected for the one-year study contracts were: Boeing Information, Space, and Defense Systems, Seal Beach, CA; Kelly Space and Technology, San Bernardino, CA; Lockheed Martin Astronautics, Denver, CO; Orbital Sciences Corporation, Dulles, VA; and Space Access, LLC, Palmdale, CA. The study contracts will involve different numbers of tasks and will range in value from $1-2 million each.

The studies will assess architectures that offer potential cost savings, including future scenarios that keep the Space Shuttle operational until 2020 and replace the Space Shuttle when cost-effective, and will develop an architecture that assumes NASA's current funding level for space transportation. These studies will identify the government marginal investment necessary for the commercial launch industry to meet NASA's launch requirements.

More information on the Space Transportation Architecture study activity can be found on the Internet at: **http://www.hq.nasa.gov/office/codea/codeae/sta_study.html**

- end -

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

David E. Steitz
Headquarters, Washington, DC
(Phone: 202/358-1730)

Lanee Cooksey
Stennis Space Center, MS
(Phone: 228/688-3341)

September 4, 1998

RELEASE: 98-159

PROJECTS SELECTED FOR COMMERCIAL USE OF REMOTE SENSING DATA

The Commercial Remote Sensing program office at NASA's Stennis Space Center, MS, has selected ten projects that could lead to new commercial uses of advanced sensors. The projects are being developed through the Earth Observations Commercial Applications Program-Hyperspectral (EOCAP-Hyperspectral).

The program is designed to increase the use of NASA technology for gathering and analyzing information about the Earth through sensors mounted on aircraft or satellites. EOCAP-Hyperspectral will define the technology gaps that prohibit or impede the use of hyperspectral data and recommend solutions for filling those gaps.

"This is the type of partnership between NASA and value-added industry that the NASA Earth Science program is forging. We want to emphasize investments of NASA sponsored technologies to demonstrate benefits of our program towards solving practical societal problems while promoting a healthy commercial remote sensing industry in the U.S.," said Dr. Ghassem Asrar, Associate Administrator for Earth Sciences, NASA Headquarters, Washington, DC.

EOCAP–Hyperspectral is managed by the Commercial Remote Sensing program office at Stennis. Its role in commercial activities is to provide financial and technical support to companies for two to three years in areas of remote sensing activities where there is substantial market risk in matching science and technology with commercial demand.

-more-

The projects support technical, market and business innovation to develop new products or services that serve emerging domestic and international markets. Selected proposals, in addition to high technical competence, typically exhibit the following traits: strong business and marketing plans; product advisory boards to guide the product and or service development; and substantial financial commitments to the projects by the companies.

The recipients of the 1998 EOCAP–Hyperspectral project awards are:

* Eastman Kodak – Rochester, NY
* United States Department of Agriculture – Beltsville, MD
* Yellowstone Ecosystem Studies – Bozeman, MT
* Applied Analysis – Billerica, MA
* Cal State-Monterey Bay – Seaside, CA
* Boeing Information, Space & Defense Systems – Seattle, WA
* GDE Systems, Inc. – San Diego, CA
* MTL Systems, Inc. – Beavercreek, OH
* Opto Knowledge Systems, Inc. (OKSI) – Torrance, CA
* Spectral International – Arvada, CO

The overall focus of the program is to expand the acceptance and use of remote sensing technology in the marketplace. Historically, the program has emphasized product development from a technical perspective. The program's new direction is to ally market knowledge with technical capability to guide product development based on customers' needs. EOCAP responds to known buyer needs by collaborating with commercial firms to develop enhanced geographic information products, incorporating advanced remote sensing and associated technologies.

The program is sponsored by NASA's Earth Science enterprise which studies the total Earth system and demonstrates the benefits of new technologies and scientific knowledge through practical applications.

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release
September 4, 1998

Dwayne C. Brown
Headquarters, Washington, DC
(Phone: 202/358-1726)

James Hartsfield
Johnson Space Center, Houston, TX
(Phone: 281/483-5111)

RELEASE: 98-160

NASA ACCEPTS "KEYS" TO FIRST U.S.-BUILT STATION COMPONENT

The Unity connecting module, the first U.S.-built component of the International Space Station, moved a step closer to orbit this week when Boeing, the manufacturer of Unity, officially handed over the module's "keys" to NASA.

NASA officially accepted the module after review and certification of Unity's construction by NASA and Boeing station managers at NASA's Kennedy Space Center, FL. Unity is scheduled for launch aboard Space Shuttle Endeavour on the STS-88 mission on Dec. 3. Unity will be launched two weeks after the first station component, the U.S.-funded, Russian-built Zarya module, from the Baikonur Cosmodrome in Kazakstan. Unity will be mated to Zarya by Endeavour's astronauts to begin the five-year orbital assembly of the International Space Station.

Unity is a critical component of the International Space Station, a six-sided connector with a berthing port on each side. Along with Unity at Kennedy, more than a half-dozen major pieces of U.S. and foreign-built hardware are now being prepared for launch.

"It is not by chance that we named this module Unity," International Space Station program manager Randy Brinkley said following the review. "The name certainly represents all of the hard work by the Boeing teams and the NASA teams, as well as the worldwide space station team. The Unity module has been a great joint effort."

Unity was manufactured by Boeing at NASA's Marshall Space Flight Center in Huntsville, AL. It was transported from Alabama to Florida in June 1997, where final assembly and launch preparations began. Attached to Unity for launch are two conical

-more-

mating adapters, also built by Boeing and officially accepted by NASA this week.

As the Unity acceptance review board completed its official work, Royce Mitchell, Boeing's ISS deputy program manager, handed his NASA counterparts plaques bearing a replica of a tool used to open the hatches on Unity and a symbolic "key" to the module.

The International Space Station draws upon the resources and expertise of 16 nations and is the largest and most complex international scientific project ever undertaken. Five international partners— the United States; Canada; member states of the European Space Agency; Japan and Russia; as well as Brazil and Italy as participants through the United States—are working together in a joint endeavor to explore space for the benefit of all humankind.

-end-

News Release

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

For Release

Jim Cast
Headquarters, Washington, DC
(Phone: 202/358-1779)

September 10, 1998

John Watson
Jet Propulsion Laboratory, Pasadena, CA
(Phone: 818/354-5011)

RELEASE: 98-161

JPL NEURAL NETWORK CHIP PAVES THE WAY TO A CLEANER AMERICA AS FORD SIGNS LICENSING AGREEMENT

A new computer chip that mimics how the human mind works is making its way from the space program to American industry and may end up in millions of American cars in years to come.

NASA's Jet Propulsion Laboratory (JPL), Pasadena, CA, and the Ford Motor Co. have signed a licensing agreement for use of an advanced neural network technology to diagnose misfiring under the hoods of Ford automobiles, among its many potential applications. With the advent of this new chip, vehicles should show a reduction in emission levels.

The smart fit between JPL's neural net hardware and Ford's automotive engineering algorithm expertise will enhance the industrial giant's ability to meet ever-stricter Clean Air Act requirements as they apply to continuous onboard diagnostics and control, officials said.

In addition, the chip is designed to improve fuel economy, resulting in financial savings for car owners. Ford engineers do not predict a price increase for installation of the chip because JPL designed a computationally powerful neuroprocessor that could be mass-produced in a highly cost-effective way. The technology also improves customer satisfaction by virtually eliminating distracting false alarms about misfiring that vehicle dashboards can signal with current under-the-hood diagnostic technology.

JPL and Ford scientists say the chip represents the first significant change in the way computing is done on vehicles since computers were first introduced into automobiles in the 1970s.

-more-

"Neural networks are a new discipline, and diagnostics, prognostics and control is a huge field. Ford's application is but the tip of the iceberg of this chip's potential use in American industry as a whole," said Tom Hamilton, program manager at JPL's Dual-Use Technology Office, one of JPL's many technology transfer arms. "JPL is proud to be able to make this revolutionary technology available for U.S. business."

The new licensing agreement provides Ford with rights to intellectual property of the chip for auto industry applications, while JPL, which has applied for patents to the technology, retains general rights. JPL is managed by the California Institute of Technology, which serves as the party of record for this license.

Neural systems were inspired by the architecture of nervous systems of animals, which use neurons, a form of parallel processing elements, to process large volumes of information simultaneously. In vehicle applications, artificial neural networks will "learn" both how to diagnose problems like engine misfires and control the engine to optimize fuel economy and emissions.

"What JPL has brought to the table is expertise in designing and building what are known as neural network 'application-specific integrated circuits'," said Dr. Raoul Tawel, who led the development at JPL for the chip. "With Ford, we are implementing highly complex neural network software code in dedicated hardware logic. This brings about a tremendous boost in computational ability compared to traditional software-based approaches, enabling real-time onboard diagnostics for the first time."

For misfire diagnostics, it is necessary to observe and diagnose every engine firing event, estimated at over one billion in the life of each car.

In addition, the diagnostic error rate has to be extremely small, less than one in a million, in order to avoid sending false alarm signals to the driver. The new chip will accomplish that task by "learning" diagnostic tasks during the vehicle development process, bypassing the need to develop conventional software that, in any event, can neither perform these tasks as well nor be implemented in large production volumes with standard microprocessors. The neural network chip, designed to carry out parallel neuron computations efficiently, overcomes the computational barriers that prevent this technology from being exploited today.

A detailed, technical explanation of the technology written by Tawel and Drs. Ken Marko and Lee Feldkamp of Ford's neural network team, among several others, is available on the Web. "Custom VLSI ASIC for Automotive Applications with Recurrent Networks" can be accessed at **http://www.jpl.nasa.gov/releases/98/ijcnn98.pdf**

For further information about JPL's technology transfer programs, visit **http://techtrans.jpl.nasa.gov/tu.html**

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Douglas Isbell
Headquarters, Washington, DC
(Phone: 202/358-1753)

September 10, 1998

Jane Platt
Jet Propulsion Laboratory, Pasadena, CA
(Phone: 818/354-5011)

RELEASE: 98-162

CONTRACTORS CHOSEN FOR SPACE INTERFEROMETRY MISSION

NASA's Jet Propulsion Laboratory (JPL), Pasadena, CA, has selected Lockheed Martin Missiles and Space, Sunnyvale, CA, and TRW Inc., Space and Electronics Group, Redondo Beach, CA, for negotiations as industry team members for the Space Interferometry Mission (SIM).

SIM is an innovative space system that will be launched in 2005 to measure precisely the location of stars and to search for planets orbiting nearby stars. SIM is part of the Origins Program in NASA's Space Science enterprise, a long-term program to enhance our understanding of the Universe and search for life beyond Earth.

The total value of these two contracts, including the mission formulation and implementation phases, is estimated to be in excess of $200 million. The initial contracts will cover the mission's formulation phase, with an option for the implementation phase. During the formulation phase, initial mission design and planning for full-scale implementation will be completed.

"This marks the start of what we envision as an exciting and productive relationship with our industry team members," said Chris Jones, SIM project manager at JPL.

SIM will be placed into an Earth-trailing orbit around the Sun. Its multiple telescopes will be used in pairs; the light they gather will be collected and processed to pinpoint the position of stars. The system will synthesize images that could normally only be obtained with a much larger telescope. It also will demonstrate the ability to "null" or cancel out the light from a star, which will help enable future missions to obtain a direct view of planets around other stars. Interferometry will play a key role in several missions of the Origins program.

-more-

SIM will search for planets beyond our Solar System by watching for the telltale wobble motion of a star, which indicates the gravitational tug of an orbiting planet or planets. SIM also will image the regions immediately surrounding massive black hole candidates in the nearest galaxies, measure the distances to half a dozen nearby galaxies, and study other celestial objects.

JPL manages SIM for NASA's Office of Space Science, Washington, DC. JPL is a division of Caltech, Pasadena, CA.

Additional information on the Space Interferometry Mission is available on the Internet:

http://huey.jpl.nasa.gov/sim/

Information on the Origins program is available at:

http://origins.jpl.nasa.gov

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release
Sept. 11, 1998

Brian Welch
Headquarters, Washington, DC
(Phone: 202/358-1600)

RELEASE: 98-163a

ARTHUR STEPHENSON NAMED TO HEAD MARSHALL SPACE FLIGHT CENTER (REVISED RELEASE)

Arthur G. Stephenson, President of Oceaneering Advanced Technologies, Houston, TX, has been named to become the next Director of NASA's Marshall Space Flight Center, Huntsville, AL.

Stephenson has over 30 years' experience as a manager in spacecraft and high technology systems.

"Arthur Stephenson is a bright, aggressive person who will fight for issues critical to NASA, and who will make sure this Agency has the best launch and in-space propulsion capabilities and technical tools in the world. He will bring a wealth of experience and a fresh vision to the operation of the Marshall Center, one of NASA's crown jewels," said NASA Administrator Daniel S. Goldin.

Goldin added that Marshall Deputy Director Carolyn Griner would assist in the transition and thanked her for serving as acting Center Director.

"Carolyn Griner has done a wonderful job at Marshall. She is deeply admired and respected by the Center staff. With these two accomplished leaders at the helm, I look for great things from Marshall in the future. With Arthur's vision and Carolyn's expertise, they make a dream team for the Center."

Since 1992, Stephenson has been a senior official with Oceaneering International. Prior to that, he worked for TRW, Redondo Beach, CA, for 28 years, and last served there as Director, Space Transportation and Servicing Advanced Programs.

- more -

At Oceaneering, he is responsible for the company's work for government agencies such as NASA, the U.S. Navy and the Department of Energy, and led the acquisition of ILC Space Systems Division in 1993. His role at Oceaneering also included overall responsibility for products and services ranging from astronaut tools and equipment to space flight robots; life support equipment; thermal protection systems for launch vehicles such as the Titan, Atlas and Delta; and special thermally controlled robotic space facilities such as the crystal preparation portion of the X-ray Crystallography Facility for the University of Alabama.

"I consider him a very dedicated, loyal, and people-oriented person," said Steve Harris, who served as Director of Marketing for TRW in Huntsville.

"I'm pleased with the announcement," said Jack Lee, a former Marshall Center director. "It underscores the importance of the Center and the key role it plays in NASA's missions, goals and strategic plan. Knowing the community of Huntsville and the people of Marshall, I know they will get behind the new team and keep Marshall on the cutting edge of space technology."

During his 34-year career, Stephenson has worked on a variety of programs related to the activities at Marshall, including the Orbital Maneuvering Vehicle in the 1970s and '80s, the Gamma Ray Observatory, automated rendezvous and docking and the space welding inspection EVA tool. The Oceaneering services he directs also include International Space Station robotic system engineering support to Boeing, the prime space station contractor, and commercial operation of Marshall's underwater training facility.

Stephenson began his career designing digital test equipment for Project Apollo. From that beginning he progressed to receiver and transmitter circuit design, and then to communications systems design. Over time, he moved to management of spacecraft subsystems, then entire spacecraft and ultimately entire launch vehicles.

Stephenson holds a B.S. in electrical engineering from the University of Redlands. He is a senior member of the American Institute of Aeronautics and Astronautics.

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Douglas Isbell
Headquarters, Washington, DC
(Phone: 202/358-1547)

September 11, 1998

Diane Ainsworth
Jet Propulsion Laboratory, Pasadena, CA
(Phone: 818/354-5011)

RELEASE: 98-164

MARTIAN MOON PHOBOS HIP-DEEP IN POWDER

New temperature data and close-up images of the Martian moon Phobos gathered by NASA's Mars Global Surveyor indicate the surface of this small body has been pounded into powder by eons of meteoroid impacts, some of which started landslides that left dark trails marking the steep slopes of giant craters.

New temperature measurements show the surface must be composed largely of finely ground powder at least three feet (one meter) thick, according to scientists studying infrared data from the Thermal Emission Spectrometer instrument on the spacecraft. Measurements of the day and night sides of Phobos show such extreme temperature variations that the sunlit side of the moon rivals a pleasant winter day in Chicago, while only a few kilometers away, on the dark side of the moon, the climate is more harsh than a night in Antarctica. High temperatures for Phobos were measured at 25 degrees Fahrenheit (-4 degrees Celsius) and lows at -170 degrees Fahrenheit (-112 degrees Celsius).

The extremely fast heat loss from day to night as Phobos turns in its seven-hour rotation can be explained if hip-deep dust covers its surface, said Dr. Philip Christensen of Arizona State University, Tempe, principal investigator for the experiment on the Mars Global Surveyor spacecraft.

"The infrared data tells us that Phobos, which does not have an atmosphere to hold heat in during the night, probably has a surface composed of very small particles that lose their heat rapidly once the Sun has set," Christensen said. "This has to be an incredibly fine powder formed from impacts over millions of years, and it looks like the whole surface is made up of fine dust."

-more-

New images from the spacecraft's Mars Orbiter Camera show many never-before seen features on Phobos, the innermost and larger of the planet's two moons, and are among the highest resolution pictures ever obtained of the rocky Martian satellites. A six-mile (10-kilometer) diameter crater called Stickney, which is almost half the size of Phobos itself, shows light and dark streaks trailing down the slopes of the bowl, illustrating that even with a gravity field only about 1/1,000th that of the Earth's, debris still tumbles downhill. Large boulders appear to be partly buried in the surface material.

Infrared measurements of Phobos were made on August 7, 19 and 31 from distances ranging between 648-890 miles (1,045-1,435 kilometers), far enough away to capture global views of the Martian moon in a single spectrum. The instrument has been able to obtain the first global-scale infrared spectra of Earth and Mars in addition to the new Phobos data, bringing new insights about the composition of these three very different worlds.

"Of the three, Earth has the most complex infrared spectra, primarily due to the presence of carbon dioxide, ozone and water vapor in its atmosphere," Christensen said. "Mars, which is much colder than Earth because of its distance from the Sun, is less complex and shows only significant amounts of carbon dioxide. The spectrum of Phobos, however, has little structure because it has no atmosphere and the energy it emits is coming entirely from its surface."

The new Phobos images and thermal spectrometer measurements are available on the Internet at: **http://www.jpl.nasa.gov** , **http://photojournal.jpl.nasa.gov/** , **http://www.msss.com/** and at **http://emma.la.asu.edu**

On Monday, Sept. 14, Mars Global Surveyor begins its second phase of aerobraking, using the friction from repeated passes through Mars' atmosphere to lower and circularize the spacecraft's orbit. Over the next four-and-a-half months, the spacecraft's flight path will be lowered from the current 11.6-hour elliptical orbit to a two-hour, nearly circular orbit over the Martian polar caps. The magnetometer and thermal spectrometer will be turned on through December to gather data each time the spacecraft passes closest to Mars' surface. In addition, the radio science team will be conducting gravity field experiments by measuring small shifts in the spacecraft's velocity as it passes behind the planet or is blocked from view by the Sun. The spacecraft team at NASA's Jet Propulsion Laboratory (JPL), Pasadena, CA, and Lockheed Martin Astronautics, Denver, is continuing to study possible options for deployment of the spacecraft's high-gain antenna once it has reached its low-altitude mapping orbit next spring.

Mars Global Surveyor is part of a sustained program of Mars exploration, managed by JPL for NASA's Office of Space Science, Washington, DC. Lockheed Martin Astronautics, Denver, CO, which built and operates the spacecraft, is JPL's industrial partner in the mission. JPL is a division of the California Institute of Technology, Pasadena, CA.

-end-

News Release

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

For Release

Douglas Isbell
Headquarters, Washington, DC
(Phone: 202/358-1547)

September 11, 1998

RELEASE: 98-165

NASA SELECTS FIRST UNIVERSITY-CLASS EXPLORERS

Small spacecraft to study the vast region between our Sun and nearby stars and the interaction of Earth's radiation belts with the solar wind have been selected as the first missions in NASA's University-class Explorers (UNEX) program.

"This selection is another step in NASA's efforts to provide increased autonomy and responsibility to the university community in the pursuit of new scientific knowledge," said Dr. Wesley T. Huntress Jr., Associate Administrator for NASA's Office of Space Science.

The Cosmic Hot Interstellar Plasma Spectrometer (CHIPS) spacecraft will use an extreme ultraviolet spectrograph during its one-year mission to study the "Local Bubble," a tenuous cloud of hot gas surrounding our Solar System that extends about 300 light-years from the Sun. Scientists believe that the million-degree gas in this region is generated by supernovae and stellar winds from hot stars, but want to better understand the origins and cooling of this gas, and apply knowledge of these processes to the study of other galaxies beyond our Milky Way.

The Principal Investigator for CHIPS is Dr. Mark Hurwitz of the University of California, Berkeley. The Earth-orbiting mission will cost $9.8 million, including launch, and will be launched aboard a commercial Final Analysis Inc. Satellite (FAISAT) as a secondary payload on a Russian Cosmos rocket in mid-2001.

The second mission, the Inner Magnetosphere Explorer (IMEX), will study the response of Earth's Van Allen radiation belts to variations in the solar wind. The energetic charged particles (mainly protons and electrons) that comprise Earth's radiation belts are potentially hazardous to both astronauts and satellite systems. IMEX will be launched into a 217-mile by 21,748-mile (350-kilometer by 35,000-kilometer) elliptical orbit around Earth with instruments to measure the populations of energetic particles and related magnetic and electric fields throughout Earth's radiation belts on a regular basis.

-more-

Together with other NASA satellites, data obtained with IMEX during these 10-hour sweeps should lead to significant improvements in our ability to predict hazardous conditions in Earth's radiation belts and our understanding of the underlying physical processes that connect the solar wind with the state of the Van Allen belts, especially during the upcoming maximum in the solar cycle. The Principal Investigator for IMEX is Dr. John Wygant of the University of Minnesota in Minneapolis. IMEX will cost $13 million and is planned to be launched as a secondary mission on an Air Force Titan IV rocket in June 2001.

The UNEX Program is designed to provide frequent flight opportunities for highly focused and relatively inexpensive science missions whose total cost to NASA is limited to $13 million. The program is managed by NASA's Goddard Space Flight Center, Greenbelt, MD, for the Office of Space Science, Washington, DC.

- end -

News Release

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

For Release

Jennifer McCarter
Headquarters, Washington, DC
(Phone: 202/358-1639)

September 15, 1998

NOTE TO EDITORS: N98-56

GOING "ALL OUT" UNDER WATER

NASA's Life Sciences Division is sponsoring the Challenge Mission, a unique outreach event, from Sept. 23-30, 1998, in Key Largo, FL. The Challenge Mission is an eight-day deployment of the Scott Carpenter Space Analog Station on the sea floor off Key Largo. The station is a fully functioning, submersible habitat that serves as a demonstration analog setting for concepts and challenges of systems needed for human exploration of space.

Invited individuals and representatives of the Challenge Project museum and national organization partners will be joined by Space Life Sciences experts in the space analog station.

The list of official crew members includes former astronaut Buzz Aldrin, movie producer James Cameron, actress Kate Mulgrew, and Tom Whittaker, the first disabled person to summit Mt. Everest. Crew members will address their choices to stay physically and mentally active at every age and to continually strive to achieve their personal best, as exemplified by John Glenn, who will fly on the Space Shuttle (STS-95) in October.

The intergenerational crew, assembled from a broad spectrum of careers, lifestyles and accomplishments, will deliver live presentations twice daily during the Challenge Mission using Internet Webcasting technologies. Crew members will engage in a series of life sciences activities and dockside discussions, focusing on human aging, in keeping with the STS-95 mission, the first of a series of collaborations between NASA Life Sciences and the National Institute on Aging of the National Institutes of Health.

A complete listing of crew members and their biographies, daily Internet communications schedules, information about STS-95 life sciences investigations and related materials is available at: **http://quest/arc.nasa.gov/space/challenge**

For more information about participating in the Challenge Mission, please contact Jennifer McCarter, Public Affairs Specialist, NASA Headquarters, (Phone: 202/358-1639), or Bonnie McClain, Space Life Sciences Education Programs Coordinator, Colorado State University, Washington, DC, (Phone: 202/488-5123).

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Douglas Isbell
Headquarters, Washington, DC
(Phone: 202/358-1753)

September 15, 1998

Jane Platt
Jet Propulsion Laboratory, Pasadena, CA
(Phone: 818/354-5011)

David Brand
Cornell University, Ithaca, NY
(Phone: 607/ 255-3651)

RELEASE: 98-167

GALILEO FINDS JUPITER'S RINGS FORMED BY DUST BLASTED OFF SMALL MOONS

Jupiter's intricate, swirling ring system is formed by dust kicked up as interplanetary meteoroids smash into the giant planet's four small inner moons, according to scientists studying data from NASA's Galileo spacecraft. Images sent by Galileo also reveal that the outermost ring is actually two rings, one embedded within the other.

The findings were announced today by scientists from Cornell University, Ithaca, NY, and the National Optical Astronomy Observatories (NOAO), Tucson, AZ, at a news briefing held at Cornell.

"We now know the source of Jupiter's ring system and how it works," said Cornell astronomer Dr. Joseph Burns, who reported on the first detailed analysis of a planet's ring system, along with Maureen Ockert-Bell and Dr. Joseph Veverka of Cornell, and Dr. Michael Belton of NOAO.

"Rings are important dynamical laboratories to look at the processes that probably went on billions of years ago when the Solar System was forming from a flattened disk of dust and gas," Burns explained. Furthermore, similar faint rings probably are associated with many small moons of the Solar System's other giant planets. "I expect we will see similar processes at Saturn and the other giant planets," Burns said.

In the late 1970s, NASA's two Voyager spacecraft first revealed the structure of Jupiter's rings: a flattened main ring and an inner, cloud-like ring, called the halo, both composed of small, dark particles. One Voyager image seemed to indicate a third, faint outer ring.

-more-

New Galileo data reveal that this third ring, known as the gossamer ring because of its transparency, consists of two rings. One is embedded within the other, and both are composed of microscopic debris from two small moons, Amalthea and Thebe.

"For the first time we can see the gossamer-bound dust coming off Amalthea and Thebe, and we now believe it is likely that the main ring comes from Adrastea and Metis," Burns said. "The structure of the gossamer rings was totally unexpected," Belton added. "These images provide one of the most significant discoveries of the entire Galileo imaging experiment."

Galileo took three dozen images of the rings and small moons during three orbits of Jupiter in 1996 and 1997. The four moons display "bizarre surfaces of undetermined composition that appear very dark, red and heavily cratered from meteoroid impacts," Veverka said. The rings contain very tiny particles resembling dark, reddish soot. Unlike Saturn's rings, there are no signs of ice in Jupiter's rings.

Scientists believe that dust is kicked off the small moons when they are struck by interplanetary meteoroids, or fragments of comets and asteroids, at speeds greatly magnified by Jupiter's huge gravitational field, like the cloud of chalk dust that rises when two erasers are banged together. The small moons are particularly vulnerable targets because of their relative closeness to the giant planet.

"In these impacts, the meteoroid is going so fast it buries itself deep in the moon, then vaporizes and explodes, causing debris to be thrown off at such high velocity that it escapes the satellite's gravitational field," Burns said. If the moon is too big, dust particles will not have enough velocity to escape the moon's gravitational field. With a diameter of just five miles (eight kilometers) and an orbit that lies just at the periphery of the main ring, tiny Adrastea is "most perfectly suited for the job."

As dust particles are blasted off the moons, they enter orbits much like those of their source satellites, both in their size and in their slight tilt relative to Jupiter's equatorial plane. A tilted orbit wobbles around a planet's equator, much like a hula hoop twirling around a person's waist. This close to Jupiter, orbits wobble back and forth in only a few months.

Jupiter's diameter is approximately 86,000 miles (143,000 kilometers). The ring system begins about 55,000 miles (92,000 kilometers) from Jupiter's center and extends to about 150,000 miles (250,000 kilometers) from the planet.

Galileo has been orbiting Jupiter and its moons for 2 1/2 years, and is currently in the midst of a two-year extension, known as the Galileo Europa Mission. JPL manages the Galileo mission for NASA's Office of Space Science, Washington, DC. JPL is a division of Caltech, Pasadena, CA. The new images, and further information on this discovery and the Galileo mission, are available on the Internet at the Galileo website: **http://www.jpl.nasa.gov/galileo** or at the Cornell website: **http://www.news.cornell.edu/releases/sept98/jupiter_rings.html**

-end-

News Release

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

For Release

Douglas Isbell
Headquarters, Washington, DC
(Phone: 202/358-1547)

September 16, 1998

John Watson
Jet Propulsion Laboratory, Pasadena, CA
(Phone: 818/354-5011)

NOTE TO EDITORS: N98-57

DEEP SPACE 1 PRELAUNCH TECHNOLOGY BRIEFING SCHEDULED FOR SEPT. 22

Representatives from the team making final preparations to launch NASA's Deep Space 1 mission will conduct a televised media briefing on the mission and its goals on Tuesday, Sept. 22, at 2 p.m. EDT. The briefing will originate from NASA Headquarters in Washington, DC, and will be carried live on NASA TV.

Deep Space 1 is now officially scheduled for liftoff at 6:59:50 a.m. EST on Oct. 25, 1998, aboard a Boeing Delta 7326 launch vehicle from Cape Canaveral Air Station, FL. However, mission managers continue to work toward a possible Oct. 15 launch. The recent change in the official launch date to Oct. 25 is due to the high demand for launch pad time at Cape Canaveral. Given that missions are allowed to make firm reservations for just two consecutive days, Deep Space 1 mission engineers chose to move their single two-day reservation from Oct. 15-16 to Oct. 25-26 to ensure that the spacecraft would be ready for launch before subsequent Delta launches. NASA officials will decide by the end of September whether to request a change back to Oct. 15-16 if final spacecraft processing remains on schedule and if the launch support system can accommodate the change at that time.

Deep Space 1 is the first mission in NASA's New Millennium Program, designed to test and validate new technologies so that they can be used confidently on science missions of the 21st century. Although Deep Space 1 will test two science instruments, this mission is one of the first-ever deep space NASA launches to have technology, rather than science, as its key focus. Much of the key technology testing will be completed within eight weeks of launch. However, Deep Space 1 plans to attempt an encounter with asteroid 1992 KD in July 1999 to demonstrate its technologies by observing a scientifically interesting body.

-more-

Presenters at the Sept. 22 press briefing are scheduled to include:

Dr. Wesley T. Huntress Jr., NASA Associate Administrator for Space Science
David Lehman, Deep Space 1 project manager, NASA's Jet Propulsion Laboratory (JPL), Pasadena, CA
Dr. Marc Rayman, Deep Space 1 chief mission engineer and deputy mission manager at JPL
Jack Stocky, manager, NASA Solar Electric Propulsion Technology Application Readiness (NSTAR) project at JPL
Dr. Barbara Wilson, New Millennium Program technologist at JPL

Extensive information on Deep Space 1 is available on the Internet at the following URL:

http://nmp.jpl.nasa.gov/DS1/

NASA Television is located on GE-2, transponder 9C at 85 degrees west longitude, vertical polarization, with a frequency of 3880 MHz, and audio of 6.8 MHz. There will be two-way question and answer capability for media at participating NASA centers.

-end-

News Release

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

Beth Schmid
Headquarters, Washington, DC
(Phone: 202/358-1760)

For Release
September 17, 1998

NOTE TO EDITORS: N98-58

STUDENTS GO BACK TO SCHOOL WITH NASA COMPUTERS

Students at Kramer Middle School in Washington, DC, will show NASA Administrator Daniel S. Goldin how NASA-donated computers will be used in their classroom on Tuesday, Sept. 22 at 10:30 a.m. EDT.

In just one year, NASA has donated over 36,000 excess computer items with an original cost of $75 million to public, private and parochial schools serving students in pre-kindergarten through 12th grade. Working with the federal Computers for Learning program, established by Vice President Al Gore in 1997, Federal agencies can now streamline the transfer of excess computer equipment to those U.S. schools with the greatest need.

A new website funded by the U.S. Department of Energy has made it even quicker and easier for schools to request and obtain free equipment that includes shipping by private companies. The web address is: **www.computers.fed.gov**

"Vice President Gore's program gives deserving schools greater access to NASA's excess computer equipment," Goldin said. "These computers, what I call 'tools of the future,' will help ensure America's children have the skills they need to succeed in the information-intensive 21st Century."

U.S schools or educational nonprofit organizations seeking additional information or assistance in accessing the computer upgrades should visit the website. A toll-free Computers for Learning hotline -- 1-888/362-7870 -- is available from 1-5 p.m. EDT, Monday through Friday.

The Computers for Learning program is part of President Clinton's Education Technology Initiative. NASA's Education Division, working with schools like Kramer, is committed to increasing student interest in mathematics, science and technology.

Event: NASA Administrator Goldin and
students at Kramer Middle School - 202/645-3520
Where: 1700 Q St., SE, Washington, DC; Principal, Cynthia Poole-Gibson
When: Tuesday, Sept. 22, 1998; 10:30 - 11 am EDT

-end-

News Release

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

For Release

Sonja Alexander
Headquarters, Washington, DC
(Phone: 202/358-1761)

September 17, 1998

RELEASE: 98-169

NASA RECOGNIZES OUTSTANDING MINORITY CONTRACTORS

NASA will recognize three minority contractors Sept. 23 for their exceptional contributions to the nation's space program.

Awards are given annually to minority contractors and subcontractors who have demonstrated significant support of NASA's initiatives.

Symtech Corporation, Alexandria, VA, NASA's minority contractor of the year, made it possible to present real time data from the Lunar Prospector on the Internet, for the first time ever from a spacecraft. The web site received over 75 million "hits" from around the world. Symtech was nominated by NASA's Ames Research Center, Moffett Field, CA. The corporation was founded in 1991 by Mr. Seymour Metters, III.

Stanford Mu Corporation, Harbor City, CA, minority subcontractor awardee, designed and developed special pressure regulator components for the Cassini spacecraft's propulsion module subsystem; Mars Global Surveyor; the Mars Surveyor 1998 Mars Climate Orbiter and Mars Polar Lander. The Mars Climate Orbiter and Mars Polar Lander are scheduled for launch in December 1998 and January 1999, respectively. Lockheed Martin Astronautics, Denver, CO, nominated the six-year old corporation.

Dynamac Corporation, Rockville, MD, which won the Women-Owned Small Business of the Year award, was nominated by NASA's Kennedy Space Center, FL. This is the first year that NASA has included the category for a women-owned small business award. Dynamac provides technical support for Kennedy's biological research and environmental monitoring programs, life science flight experiments, biomedical operations and Agencywide occupational health programs. Dynamac was founded in 1970 by Diana MacArthur, CEO.

NASA will honor the three companies on Wednesday, Sept. 23, 1998, at 2:30 p.m. EST in the NASA Headquarters Auditorium, 300 E St. SW, Washington, DC.

-end-

News Release

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

For Release

September 17, 1998

David E. Steitz
Headquarters, Washington, DC
(Phone: 202/358-1730)

Lynn Chandler
Goddard Space Flight Center, Greenbelt, MD
(Phone: 301/614-5562)

RELEASE: 98-170

SEAWIFS COMPLETES A YEAR OF REMARKABLE EARTH OBSERVATIONS

For the first time in history, NASA is releasing dramatic images documenting the Earth's changing biology, both on land and in the oceans, as observed from space for one continuous year.

The changing seasons of life, the "pulse of the planet," are being monitored by the Sea-viewing Wide Field-of-view Sensor (SeaWiFS), which was launched on Aug. 1, 1997, and has continuously produced data since Sept. 18, 1997. The SeaWiFS mission is the first NASA Earth Science data purchase in which industry led the development of the full mission.

"Although originally designed to observe the oceans, SeaWiFS provides a unique capability to study the land and atmospheric processes as well," said Dr. Gene Feldman, oceanographer, who heads SeaWiFS' data processing team at NASA's Goddard Space Flight Center, Greenbelt, MD. "As a result, we can monitor changes in the global biosphere with a single sensor over land and ocean."

Among the highlights of SeaWiFS' first continuous year of observation were new insights into the impact of the El Niño climate anomaly on ocean life. Further, SeaWiFS was able to monitor a variety of natural disasters, including fires in Florida, Mexico, Canada, Indonesia and Russia; floods in China; dust storms in the Sahara and Gobi Deserts; and the progress of hurricanes, such as Bonnie and Danielle.

SeaWiFS enabled scientists to witness the ocean transition from El Niño to La Niña conditions in the Equatorial Pacific, specifically around the Galapagos Island. The instrument also allowed researchers to observe the striking speed with which the ocean returned to its pre-El Niño state. While El Niño essentially shut down the highly productive Equatorial Pacific ecosystem, the subsequent La Niña resulted in unprecedented

-more-

phytoplankton blooms, which stretched across the entire basin from the South American coast to the Western Pacific warm pool.

Phytoplankton are microscopic marine plants that remove carbon dioxide from the atmosphere for internal use. Scientists are eager to understand this exchange of carbon dioxide and the role it plays in the global climate.

"One of the most fascinating events witnessed in the global ocean was the Spring bloom in the North Atlantic," said Dr. Charles McClain, SeaWiFS project scientist. "While many regions of the ocean experience a spring bloom, the event in the North Atlantic was the most dramatic."

During the winter, storms and surface cooling mix the surface waters of the Atlantic, replenishing the nutrient supply from the deep, cold, nutrient-rich waters. Once sunlight is sufficient to support plant growth, phytoplankton populations explode and persist for nearly three months until nutrients are depleted. This bloom migrates northward following the Sun throughout the spring and summer.

Unexpected phenomena observed by SeaWiFS, according to McClain, were the massive blooms of coccolithophores, a unique type of phytoplankton in the Bering Sea. These blooms may have a significant impact on fish populations in this area, one of the most productive fishery regions in the global ocean.

During the summer-fall of 1997 and spring of 1998, expansive blooms of coccolithophores occurred along the Alaskan shelf. These were the first observations of blooms of this magnitude in the Bering Sea. Coccolithophores shed vast numbers of white carbonate platelets which cloud the water. "The net result was fish that normally spawn in the adjacent rivers could not trasverse the bloom in order to enter the rivers to spawn. In addition, local bird and marine mammal populations had a high mortality rates due to starvation because the fish migrated to other waters," said McClain.

NASA is leading an international collaboration using SeaWiFS data. More than 800 scientists representing 35 countries already have registered to use the data. There are over 50 ground-stations throughout the world which receive data from the spacecraft. In addition, the unique government-industry partnership with ORBIMAGE, Dulles VA, represents a new way of doing business for NASA.

SeaWiFS is an essential component of NASA's Earth Sciences enterprise, an ongoing effort to study the changing global environment. Using the unique perspective available from space, NASA will observe, monitor and assess large-scale environmental processes focusing on climate change.

Remarkable images from this mission are available on the World Wide Web at URL:
http://seawifs.gsfc.nasa.gov/SEAWIFS.html

-end-

Contract Announcement

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

Douglas Isbell
Headquarters, Washington, DC
(Phone: 202/358-1753)

For Release
September 21, 1998

RELEASE: C98-o

NASA AWARDS NEW CONTRACT FOR OPERATION OF JET PROPULSION LABORATORY

The NASA Management Office at the Jet Propulsion Laboratory (JPL), Pasadena, CA, has awarded a new five-year contract to the California Institute of Technology in Pasadena to continue managing and operating JPL for NASA as a Federally Funded Research and Development Center through the year 2003.

"NASA and Caltech have a long and successful history of studying the Earth and exploring space together through the work of JPL, and this new contract enables that productive relationship to continue," said Dr. Wesley T. Huntress Jr., NASA Associate Administrator for Space Science.

The estimated annual value of the cost-plus-award-fee contract is $1.25 billion, for an estimated total contract value of $6.25 billion.

The contract supports a variety of ongoing and planned activities, including the Mars Surveyor robotic exploration program; the Cassini mission to Saturn; NASA Origins Program missions such as the Space Infrared Telescope Facility; Earth-observing spacecraft such as the upcoming QuikScat mission; and the Deep Space Network of communications antennas.

Further information about JPL and the programs that it manages for NASA is available on the Internet at the following address:

http://www.jpl.nasa.gov

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Debra Rahn
Headquarters, Washington, DC
(Phone: 202/358-1638)

September 21, 1998

George Diller/Lisa Malone
Kennedy Space Center, FL
(Phone: 407/867-2468)

NOTE TO EDITORS: N98-

LEONARDO MPLM TRANSFER CEREMONY AT KSC SEPT. 25

NASA Administrator Daniel S. Goldin and the President of the Italian Space Agency, Sergio De Julio, will meet at NASA's Kennedy Space Center, FL, on Friday, Sept. 25 for a ceremonial event transferring the "Leonardo" Multipurpose Logistics Module (MPLM) from the Italian Space Agency (ASI) to NASA.

The MPLM, a reusable logistics carrier, is the primary delivery system used to resupply the International Space Station (ISS) and return Station cargo requiring a pressurized environment. It is one of Italy's major contributions to the Station program. The cylindrical module is approximately 21 feet long, 15 feet in diameter, and weighs almost 4.5 tons.

Leonardo will be carried to the International Space Station aboard the Space Shuttle and will be temporarily docked to the Station once on orbit, providing a working environment for two crew members. It can carry up to 20,000 pounds of supplies, science experiments, spare parts and other logistical components for ISS.

A ceremonial signing of a document signifying the transfer of Leonardo, the first of three MPLM carriers, will be held at the International Space Station Center, located adjacent to the Space Station Processing Facility at KSC. This activity will begin at 11 a.m. on Friday, Sept. 25. Participating in the ceremony will be:

Daniel S. Goldin, NASA Administrator
Sergio De Julio, President, Italian Space Agency
Roy D. Bridges, Director, Kennedy Space Center

-more-

At noon, media will be escorted to the Space Station Processing Facility to see Leonardo and for a photo/interview opportunity. Available will be:

Daniel S. Goldin, NASA Administrator
Sergio De Julio, President, Italian Space Agency
Roy D. Bridges, Director, Kennedy Space Center
Joseph H. Rothenberg, NASA Associate Administrator for Space Flight
Gretchen W. McClain, NASA Deputy Associate Administrator for Space Development
John D. Schumacher, NASA Associate Administrator of External Relations
Randy Brinkley, NASA International Space Station Program Manager
Giovanni Rum, Advisor to the ASI President
Silvana Rabbia, ASI MPLM Program Manager
Giuseppe Viriglio, Head, Alenia Aerospazio Space Division
Saverio Lioy, Head, Alenia Space Infrastructure Program
Royce Mitchell, Boeing Deputy Program Manager for International Space Station

Astronauts Chris Hadfield and Robert Curbeam, members of the Space Shuttle crew that will launch Leonardo in late 1999, as well as Italian astronaut Umberto Guidoni, will be present.

Media representatives should be at the KSC Press Site at 10 a.m. for transportation to the International Space Station Center. Since media will later be taken inside the high bay of the Space Station Processing Facility, long pants and closed-toe shoes are required. No shorts or sandals are allowed. Also, no food, tobacco, lighters, matches or knives can be permitted inside the high bay. Media will be returned to the KSC Press Site by 1 p.m.

Those media needing accreditation should contact the NASA News Center at KSC at 407/867-2468 before the close of business, Thursday, Sept. 24.

-end-

News Release

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

For Release

Debra Rahn
Headquarters, Washington, DC
(Phone: 202/358-1638)

Sept. 24, 1998

George Diller/Lisa Malone
Kennedy Space Center, FL
(Phone: 407/867-2468)

RELEASE: N98-60

LEONARDO MPLM TRANSFER CEREMONY POSTPONED

The ceremony transferring the "Leonardo" Multipurpose Logistics Module (MPLM) from the Italian Space Agency (ASI) to NASA at the Kennedy Space Center, FL, on September 25, 1998, has been postponed due to adverse weather forecast for the central Florida area from Hurricane Georges. A new date for the ceremony has not yet been set.

-end-

News Release

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

Donald Savage
Headquarters, Washington, DC
(Phone: 202/358-1547)

Tim Tyson
Marshall Space Flight Center, Huntsville, AL
(Phone: 256/544-0994)

For Release
September 24, 1998

NOTE TO EDITORS: N98-61

RECENT WAVE OF STELLAR RADIATION TO BE DISCUSSED

The next Space Science Update, scheduled for 2 p.m. EDT, Tuesday, Sept. 29, will feature discussion of an intense wave of gamma rays that struck Earth's atmosphere on August 27, 1998, from a mysterious super-magnetic star 20,000 light years away. (The wave caused no health effects.) A panel of astronomers will explain the importance of this event, its effect on the Earth, and what scientists have learned about this newly discovered type of star called a magnetar, one of the most unusual in the Universe.

Panel members are:

* Dr. Chryssa Kouveliotou, astrophysicist, Space Sciences Laboratory, NASA Marshall Space Flight Center, Huntsville, AL;
* Dr. Robert Duncan, research astrophysicist, University of Texas, Austin;
* Dr. James Cordes, professor of astronomy, Cornell University, Ithaca, NY;
* Dr. Kevin Hurley, research physicist and Senior Space Fellow, University of California, Berkley;
* Dr. Paul Hertz, program scientist, Office of Space Science, NASA Headquarters, will be panel moderator.

The Update will originate from the NASA Headquarters Auditorium, 300 E St., S.W., Washington, DC, and will be carried live on NASA TV with two-way question-and-answer capability for reporters covering the event from participating NASA centers. NASA Television is broadcast on the GE2 satellite, transponder 9C, at 85 degrees West longitude, frequency 3880.0 Mhz, audio 6.8 MHz. Audio of the broadcast will be available on voice circuit at the Kennedy Space Center on 407/867-1220.

- end -

News Release

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

Ray Castillo
Headquarters, Washington, DC
(Phone: 202/358-4555)

For Release
September 24, 1998

RELEASE: 98-171

NASA HISTORY WINS PRESTIGIOUS PRIZE

The International Academy of Astronautics (IAA) has selected "Walking to Olympus: An EVA Chronology," written by David S. Portree and Robert C. Trevino and published by NASA, as the winner of the 1998 Luigi Napolitano Book Award. The award will be presented in Melbourne, Australia, on Sept. 27, during the 1998 IAA award dinner.

This monograph was produced through the auspices of the Extravehicular Activity (EVA) Office at NASA's Johnson Space Center, Houston, TX. Portree, an historian, and Trevino, an engineer working in advanced EVA programs, collaborated on this chronology, which is envisioned as the first part of a larger effort to document the history of space walking. As NASA gets closer to the first launch in the assembly sequence of the International Space Station, this monograph is timely in showing what past EVAs have accomplished and what hurdles had to be surmounted to carry them out.

This is the seventh publication in a new series of special studies prepared by the NASA History Office, a division of the Office of Policy and Plans. The Monographs in Aerospace History series examines a wide variety of topics in the history of aeronautics and space. These publications are tightly focused, relatively short, and reproduced in an inexpensive format to allow timely and broad dissemination. Suggestions for additional publications in the Monographs in Aerospace History are welcome.

The International Academy of Astronautics was founded in Stockholm on Aug. 16, 1960. Since that time, the IAA has regularly brought together the world's foremost experts in the disciplines of astronautics to recognize the accomplishments of their peers; to explore and discuss cutting-edge issues in space research and technology; and to provide direction and guidance in the non-military uses of space and the ongoing exploration of the solar system. The Luigi Napolitano Book Award is given annually for a recent space-related publication by an individual or group who is not a member of the Academy.

Copies of the book can be obtained by contacting Dr. Roger D. Launius, senior NASA Historian via e-mail at roger.launius@hq.nasa.gov, fax at 202/358-2866, or phone at 202/358-0384.

-end-

Contract Announcement

National Aeronautics and
Space Administration

Washington, DC 20546
(202) 358-1600

For Release

Dwayne Brown
Headquarters, Washington
(Phone: 202/358-1726)

September 25, 1998

Eileen Hawley
Johnson Space Center, Houston, TX
(Phone: 281/483-5111)

RELEASE: c98-p

LOCKHEED MARTIN SPACE OPERATIONS CO. AWARDED CONTRACT TO MANAGE NASA'S SPACE OPERATIONS

In yet another major step to save the American taxpayer money, NASA has awarded a $3.44 billion contract to Lockheed Martin Space Operations Co., Houston, TX, to manage the Agency's space operations activities.

The Consolidated Space Operations contractor will manage all of NASA's data collection, telemetry and communication operations supporting its Earth-orbiting satellites, planetary exploration, and human space flight activities. The contract shifts management responsibility from five NASA centers to a single entity, which is an unprecedented step for an operation of this magnitude. This effort is being closely observed by other government agencies that also are reviewing consolidating their operations.

"Since becoming NASA Administrator I have committed myself to reviewing the way NASA does business and challenging the NASA team to look at ways to streamline operations and make them more efficient. This contract is projected to save the American taxpayers approximately $1.4 billion over 10 years," said Daniel S. Goldin.

The basic contract amounts to $1.90 billion for a duration of five years, including a three-month phase-in period. The contract runs from October 1998 to December 2003. The award also contains options totaling $1.54 billion, which includes a five-year extension of the basic effort (January 2004 through December 2008); additional options for work at the Kennedy Space Center, FL; and enhanced mission and data service support to the International Space Station program.

-more-

"Lockheed Martin was selected based on the overall best value of the company's proposal that will significantly improve the efficiency of NASA's traditional mission and data services infrastructure," said Joseph Rothenberg, Associate Administrator for Space Flight, Washington, DC.

Under the contract guidelines, NASA will adopt a plan that calls for implementing private sector commercial practices, products, services and technology. NASA expects the contractor to reduce overlap, eliminate duplication, and increase efficiency by streamlining service delivery processes. NASA also expects Lockheed Martin to "commercialize" or "privatize" government systems where the offset will lower the life-cycle cost of space flight missions.

The range of the contract's services will include data acquisition from a spacecraft, data transmission to the end user, data processing and storage, ground and space communications, and mission control center operations.

The Lockheed Martin Space Operations Co. team includes Allied Technical Services Corp. with Computer Sciences Co., Booz-Allen & Hamilton, Inc., GTE Government Systems, GHG Corp., Cimarron, and more than 40 other subcontractors.

The work will be performed at five NASA locations including the Johnson Space Center, Houston, TX; Goddard Space Flight Center, Greenbelt, MD; Marshall Space Flight Center, Huntsville, AL; Kennedy Space Center, FL; and the contractor-operated Jet Propulsion Laboratory, Pasadena, CA.

-end-

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Donald Savage
Headquarters, Washington, DC
(Phone: 202/358-1547)

Sept. 29, 1998

Tim Tyson
Marshall Space Flight Center, Huntsville, AL
(Phone: 256/544-0994)

RELEASE: 98-172

TREMENDOUS GAMMA-RAY FLARE BLASTS EARTH

An intense wave of gamma rays, emanating from a catastrophic magnetic flare on a mysterious star 20,000 light years away, struck the Earth's atmosphere on August 27, 1998, providing important clues about some of the most unusual stars in the Universe. Scientists said the gamma radiation posed no health risk to humans.

The wave hit the night side of the Earth and ionized (or knocked electrons out of) the atoms in the upper atmosphere to a level usually seen only during daytime. This astonishing blast of ionization was detected by Prof. Umran Inan of Stanford University. "It is extremely rare for an event occurring outside the solar system to have any measurable effect on the Earth," Inan said. It was so powerful that it blasted sensitive detectors to maximum or off-scale on at least seven scientific spacecraft in Earth orbit and around the solar system.

The wave of radiation emanated from a newly discovered type of star called a magnetar. Magnetars are dense balls of super-heavy matter, no larger than a city but weighing more than the Sun. They have the greatest magnetic field known in the Universe, so intense that it powers a steady glow of X-rays from the star's surface, often punctuated by brief, intense gamma-ray flashes, and occasionally by cataclysmic flares like the one observed on August 27. Astronomers think that all these effects are caused by an out-of-control magnetic field -- a field capable of heating, mixing, and sometimes cracking the star's rigid surface to bits.

In June a team of scientists led by Dr. Chryssa Kouveliotou of NASA's Marshall Space Flight Center in Huntsville, AL, used NASA's Compton Gamma Ray Observatory to detect a series of about 50 flashes from the star, a type called a Soft Gamma Repeater (SGR), known as "SGR1900+14" in the constellation Aquila. During the flashing episode, Kouveliotou's team, in collaboration with Dr. Tod Strohmayer and his colleagues at NASA's Goddard Space Flight Center, Greenbelt, MD, pointed sensitive X-ray detectors

- more -

aboard NASA's Rossi X-ray Timing Explorer satellite toward the star. They found faint X-rays coming from the star, which pulsed regularly in intensity every 5.16 seconds.

These 5.16-second pulses already had been detected in April, when Dr. Kevin Hurley, University of California, Berkeley, aimed the Japanese/NASA Advanced Satellite for Cosmology and Astrophysics (ASCA) at the star. Comparisons of the ASCA and RXTE data showed that the X-ray pulses were gradually slowing down.

The finding implies that the Soft Gamma Repeater has a magnetic field about 800 trillion times stronger than Earth's magnetic field, and about 100 times stronger than any found anywhere in the Universe. Kouveliotou and her team had earlier found that another SGR was also a magnetar. This was exactly what Dr. Robert Duncan, University of Texas, Austin, and Dr. Christopher Thompson, University of North Carolina, Chapel Hill, predicted in 1992 when they originated the "magnetar" theory.

Before the NASA team could announce these conclusions, SGR1900+14 emitted the tremendous flare of August 27, which was observed by almost every spacecraft with a high-energy radiation detector in space.

"Magnetars seem to answer several mysteries about the structure and evolution of stars," said Kouveliotou. "We think magnetars spend their first 10,000 years as Soft Gamma Repeaters. As they weaken with age and slow their rotation, they become Anomalous X-ray Pulsars -- stars that do not have enough 'juice' to flash anymore, but which emit a steady flow of X-rays for perhaps another 30,000 years. After that, they fade to black and drift for eternity through the heavens. The absence of observable pulsars in some supernova remnants just means that the pulsar's lights have gone out sooner than we expected."

A magnetar forms from the explosion, or supernova, of a very large, ordinary star. The star's heavy center collapses under its own gravity into a dense ball of super-compressed matter 12 miles across. This "neutron star" consists mostly of neutrons in a dense fluid, but the outer layers solidify into a rigid crust of atoms about 1 mile deep, with a surface of iron.

Even with this solid crust, a magnetar is incredibly unstable. Almost unimaginable magnetic fields, about 800 trillion times that of Earth's, cause the crust to crack and ripple in powerful starquakes. The energy released in these explosive starquakes streams out into space as intense flashes of gamma-rays. In the August 27 flare, pure magnetic energy was also released, as the star's entire crust was broken to bits.

"A magnet this strong could erase the magnetic strip on the credit cards in your wallet or pull the keys out of your pocket from a distance halfway to the Moon," said Duncan.

- end -

EDITOR'S NOTE: Additional information on magnetars or the Aug. 27 event is available on the internet at: http://www1.msfc.nasa.gov/NEWSROOM/ and http://www.magnetars.com/

NewsRelease

National Aeronautics and
Space Administration

Washington, D.C. 20546
(202) 358-1600

For Release

Ray Castillo
Headquarters, Washington, DC
(Phone: 202/358-4555)

September 30, 1998

RELEASE: 98-174

NASA TURNS 40 ON THURSDAY

"An Act to provide for research into the problems of flight within and outside the Earth's atmosphere, and for other purposes" -- with this simple preamble, the National Aeronautics and Space Administration (NASA) was created on October 1, 1958.

On Thursday, October 1, at 2 pm EDT, Administrator Daniel Goldin will kick off NASA's celebration with an address to all employees from the NASA Headquarters auditorium. He will be joined by Susan Eisenhower, President of Eisenhower Inc. and a visiting fellow at Harvard University, who will provide NASA employees with an historical context within which to consider their many accomplishments. The Headquarters 40th anniversary program will be carried live on NASA Television. (NASA Television is available on GE-2, transponder 9C.)

NASA will continue to celebrate its 40th anniversary throughout the year by looking toward the future with its various missions. On October 25, the Deep Space 1 mission will be launched to demonstrate the first ion propulsion engine to operate in deep space.

On October 29, NASA will nod to the past when Senator John Glenn joins the rest of the STS-95 crew aboard Space Shuttle Discovery. In November and December, the first components of the International Space Station will be launched from Baikonur, Kazahkstan, and Kennedy Space Center, Florida, beginning a new era in long-term human space exploration.

NASA will return to Mars with the launches of the Mars Climate Orbiter in December 1998 and the Mars Polar Lander in January 1999. Also, early in 1999, NASA will continue its commitment to cutting-edge astronomy by launching the Advanced X-ray Astrophysics Facility.

-more-

Not content with looking only outward, NASA will turn its vision to our own planet with the launch of the QuikScat satellite on November 24, a "faster, better, cheaper" mission that will study ocean winds and add to our knowledge of El Nino. The EOS-AM-1 satellite, scheduled for launch in the summer of 1999, will be the first of a new constellation of Earth Observing Satellites.

NASA will also continue its ground-breaking aeronautics research by testing new propulsion technology with the Hyper-X program. Looking toward the next 40 years, the X-33 and X-34 programs will begin flight demonstration tests in mid-1999 that will lead to the next generation space launch vehicle.

Since its inception in 1958, NASA has accomplished many great scientific and technological feats. At its 40th anniversary, NASA remains a leading force in scientific research and continues to stimulate public interest in aeronautics and aerospace exploration, science, and technology. Perhaps more importantly, NASA's exploration of space has taught humankind to view the Earth and the universe in a new way.

More information on NASA's future programs can be found on the NASA Homepage: http://www.nasa.gov/

For further information on NASA's origins and accomplishments, browse through the 40th anniversary page: http://www.hq.nasa.gov/office/pao/History/40thann/40home.htm

- end -